Study	Article author (year)	Country	Study design	N	Boys (%)	Age (mths)	Outcome domains reported	Intervention category	Control group	Primary setting	Person delivering
72	Rogers et al. (2019)	USA	Random	118	77.97	21.02	Autism characteristics, adaptive functioning, cognition	NDBI	TAU	Home	Parent delivered
72	Rogers et al. (2012)	USA	Random	98	77.55	20.98	Autism characteristics, adaptive functioning, cognition	NDBI	TAU	Health	Parent delivered
73	Rogers et al. (2014)	USA	Non-random	14	63.64	9	Autism characteristics, cognition	NDBI	TAU	Health	Parent delivered
74	Ruiz (2020)	USA	Random	40	97.5	60.38	Autism characteristics	NDBI	TAU	Community	Clinician
75	Shawler (2017)	USA	Random	51	86.27	27.69	Cognition	Behavioural	TAU	NA	Clinician and parent
76	Sheinkopf and Siegel (1998)	USA	Cohort	22	NR	34.55	Autism characteristics, cognition	Behavioural	TAU	Home	Clinician
77	Shire et al. (2017)	USA	Random	113	77.88	31.63	Autism characteristics	NDBI	TAU	Community	Teacher delivered
78	Sinai-Gavrilov et al. (2020)	Israel	Non-random	51	82.35	44.37	Adaptive functioning, cognition	NDBI	Eclectic	Early education	Teacher delivered
79	Solomon et al. (2014)	USA	Random	128	82.03	50.19	Autism characteristics, cognition, family outcomes, adverse effects	Developmental	TAU	Home	Parent delivered
80	Spjut Jansson et al. (2016)	Sweden	Cohort	52	72.5	36.09	Autism characteristics, adaptive functioning	Developmental	Eclectic	Home	Clinician
81	Stadnick et al. (2015)	USA	Non-random	30	80	54.83	Autism characteristics, adaptive functioning, adverse effects	NDBI	TAU	Community	Parent delivered

Study	Article author (year)	Country	Study design	N	Boys (%)	Age (mths)	Outcome domains reported	Intervention category	Control group	Primary setting	Person delivering
82	Stahmer et al. (2020)	USA	Non-random	25	68	22.76	Autism characteristics, adaptive functioning, cognition, family outcomes	NDBI	TAU	Community	Parent delivered
83	Strauss et al. (2012)	NA	Non-random	44	93.18	49.43	Autism characteristics, adaptive functioning, cognition, adverse effects	Behavioural	Eclectic	Home	Clinician and parent
84	Sullivan (2014)	USA	Random	48	77.08	23.5	Autism characteristics, cognition	NDBI	TAU	Home	Clinician and parent
85	Tonge et al. (2006)	Australia	Random	70	82.86	46.41	Family outcomes, adverse effects	Behavioural	TAU	Health	Parent delivered
85	Tonge et al. (2014)	Australia	Random	70	82.86	46.67	Autism characteristics, adaptive functioning, cognition	Behavioural	TAU	Health	Parent delivered
86	Tsang et al. (2007)	Hong Kong	Non-random	34	85.29	48.68	Autism characteristics, adaptive functioning, cognition	TEACCH	TAU	Early education	Teacher delivered
87	Van der Paelt et al. (2016)	Belgium	Cohort	55	80	47.41	Autism characteristics, adaptive functioning, cognition	Behavioural	Eclectic	Community	Clinician
87	Van der Paelt et al. (2016)	Belgium	Cohort	65	81.54	50.34	Autism characteristics, adaptive functioning, cognition	Developmental	Eclectic	Community	Clinician
88	Vernon et al. (2019)	USA	Random	23	86.96	35.13	Autism characteristics, adaptive functioning, cognition	NDBI	TAU	Community	Clinician and parent
88	Barrett et al. (2020)	USA	Random	21	NR	36.8	Autism characteristics, cognition	NDBI	TAU	Home	Clinician and parent

Study	Article author (year)	Country	Study design	N	Boys (%)	Age (mths)	Outcome domains reported	Intervention category	Control group	Primary setting	Person delivering
89	Vinen et al. (2018)	Australia	Cohort	59	88.14	37.4	Autism characteristics, cognition	NDBI	Eclectic	Community	Clinician
90	Vivanti et al. (2014)	Australia	Cohort	57	87.72	41.18	Autism characteristics, adaptive functioning, cognition	NDBI	Eclectic	Community	Clinician
91	Warreyn and Roeyers (2014)	Belgium	Random	36	75	77.9	Autism characteristics	Developmental	TAU	Health	Clinician
92	Waters et al. (2020)	USA	Non-random	94	95.74	40.1	Adaptive functioning, cognition	Behavioural	TAU	Community	Clinician and parent
93	Whalen et al. (2010)	USA	Random	24	NR	NR	Cognition	Technology-based	TAU	Early education	Teacher delivered
94	Whitehouse et al. (2017)	Australia	Random	75	78.75	39.78	Autism characteristics, adaptive functioning, cognition	Technology-based	TAU	Home	Parent delivered
95	Xu et al. (2018)	China	Random	36	88.89	44.94	Autism characteristics	NDBI	Eclectic	Early education	Teacher delivered
95	Xu et al. (2017)	China	Random	36	94.44	44.94	Autism characteristics, cognition, adverse effects	NDBI	TAU	Early education	Teacher delivered
96	Zachor et al. (2007)	NA	Cohort	39	94.87	28.24	Autism characteristics, cognition	Behavioural	Eclectic	Health	Clinician
97	Zachor and Ben Itzchak (2010)	Israel	Cohort	78	91.03	25.4	Adaptive functioning, cognition	Behavioural	Eclectic	Early education	Clinician and parent
98	Zhou et al. (2018)	China	Non-random	43	88.37	26.55	Autism characteristics, cognition, adverse effects	NDBI	TAU	Health	Parent delivered

B3. Quality of the evidence used within this report

B3.1 Randomised controlled trials

The assessed risk of bias level (low risk, some concerns, high risk) for each of the five domains within the Cochrane RoB 2.0 tool (Sterne et al., 2019) for each of the randomised controlled trial studies included within this report are displayed in **Table B2**.

Table B2: Domain and overall risk of bias assessments for included randomised controlled trials using Cochrane RoB 2.0

Notes: Study refers to the IDs in Table B1.

Low risk assessments are highlighted in green.

Risk assessments of some concern are highlighted in yellow.

High risk assessments are highlighted in red.

Study	Randomisation process	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
1	Some concerns	Low risk	Low risk	Low risk	Low risk	Some concerns
3	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
7	High risk	Low risk	Low risk	Low risk	Low risk	High risk
9	Low risk	Low risk	Low risk	Some concerns	Some concerns	Some concerns
11	Some concerns	Some concerns	Low risk	Low risk	Some concerns	Some concerns
12	Some concerns	Low risk	Low risk	High risk	Low risk	High risk
15	Some concerns	Low risk	Low risk	High risk	Some concerns	High risk
19	Some concerns	Low risk	Low risk	Low risk	Some concerns	Some concerns
21	High risk	Low risk	Some concerns	Some concerns	Some concerns	High risk
28	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
30	Some concerns	Low risk	Low risk	Low risk	Some concerns	Some concerns
33	Low risk	Low risk	Some concerns	Some concerns	Some concerns	Some concerns
34	Some concerns	Some concerns	Low risk	High risk	Some concerns	High risk
36	Low risk	Low risk	Low risk	Low risk	High risk	High risk

Study	Randomisation process	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
37	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
38	Some concerns	Low risk	Some concerns	High risk	Some concerns	High risk
40	Low risk	Low risk	Some concerns	Low risk	Some concerns	Some concerns
41	Low risk	Low risk	Low risk	High risk	Some concerns	High risk
43	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
45	Low risk	Low risk	Some concerns	Low risk	Some concerns	Some concerns
47	Low risk	Low risk	Low risk	High risk	Low risk	High risk
48	Some concerns	Low risk	Low risk	High risk	Some concerns	High risk
51	Low risk	Low risk	Low risk	High risk	Some concerns	High risk
52	High risk	Low risk	Low risk	Low risk	High risk	High risk
53	Low risk	Some concerns	High risk	High risk	Some concerns	High risk
55	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
56	Some concerns	Low risk	Low risk	Low risk	Some concerns	Some concerns
57	High risk	Low risk	Low risk	Low risk	Some concerns	High risk
58	Low risk	Low risk	High risk	High risk	Some concerns	High risk
59	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
60	Some concerns	Low risk	Low risk	Low risk	Some concerns	Some concerns
62	Low risk	Low risk	Low risk	High risk	Some concerns	High risk
64	Low risk	Low risk	Some concerns	High risk	Some concerns	High risk
65	Some concerns	Low risk	Low risk	Low risk	Some concerns	Some concerns
67	High risk	Low risk	Low risk	Low risk	Some concerns	High risk
69	High risk	Low risk	Some concerns	Some concerns	Some concerns	High risk
71	High risk	Low risk	Low risk	Low risk	Some concerns	High risk

Study	Randomisation process	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
72	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
74	Low risk	Low risk	High risk	Low risk	Some concerns	High risk
75	Some concerns	Low risk	Low risk	High risk	Some concerns	High risk
77	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
79	Low risk	Low risk	Some concerns	High risk	Low risk	High risk
84	High risk	Low risk	High risk	Low risk	Some concerns	High risk
85	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
88	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
91	High risk	High risk	High risk	Low risk	Some concerns	High risk
93	High risk	Low risk	Low risk	Some concerns	Some concerns	High risk
94	Some concerns	Low risk	Low risk	High risk	Some concerns	High risk
95	Low risk	Low risk	Low risk	High risk	Some concerns	High risk

B3.2 Non-randomised study designs

The assessed risk of bias level (low risk, moderate risk, serious risk) for each of the five domains within the ROBINS-I tool (Sterne et al., 2016) For each of the non-randomised studies included within this report are displayed in **Table B4**.

Table B3: Domain and overall risk of bias assessments for included non-randomised studies using ROBINS-I

Notes: Study refers to the IDs in Table B1.

Low risk assessments are highlighted in green.

Moderate risk assessments are highlighted in yellow.

Serious risk assessments are highlighted in red.

Study	Bias due to confounding	Bias in selection of participants	Bias in classification of interventions	Bias due to deviations from intended interventions	Bias due to missing data	Bias in measurement of outcomes	Bias in selection of the reported result	Overall
2	Moderate risk	Low risk	Serious risk	Low risk	Serious risk	Serious risk	Serious risk	Serious risk
4	Serious risk	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Serious risk
5	Moderate risk	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Serious risk
6	Serious risk	Low risk	Low risk	Low risk	Serious risk	Serious risk	Moderate risk	Serious risk
8	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
10	Serious risk	Low risk	Low risk	Low risk	Serious risk	Serious risk	Serious risk	Serious risk
13	Moderate risk	Low risk	Low risk	Low risk	Serious risk	Low risk	Moderate risk	Serious risk
14	Moderate risk	Low risk	Low risk	Low risk	Moderate risk	Low risk	Moderate risk	Moderate risk
16	Serious risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk

Study	Bias due to confounding	Bias in selection of participants	Bias in classification of interventions	Bias due to deviations from intended interventions	Bias due to missing data	Bias in measurement of outcomes	Bias in selection of the reported result	Overall
17	Serious risk	Serious risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Serious risk
18	Serious risk	Low risk	Low risk	Low risk	Serious risk	Serious risk	Moderate risk	Serious risk
20	Serious risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
22	Serious risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
23	Serious risk	Serious risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Serious risk
24	Serious risk	Serious risk	Low risk	Low risk	Serious risk	Serious risk	Moderate risk	Serious risk
25	Serious risk	Low risk	Moderate risk	Low risk	Low risk	Low risk	Moderate risk	Serious risk
26	Serious risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
27	Moderate risk	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk
29	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
31	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
32	Moderate risk	Low risk	Low risk	Low risk	Moderate risk	Serious risk	Moderate risk	Serious risk
35	Moderate risk	Low risk	Low risk	Low risk	Moderate risk	Serious risk	Moderate risk	Serious risk
39	Serious risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk

Study	Bias due to confounding	Bias in selection of participants	Bias in classification of interventions	Bias due to deviations from intended interventions	Bias due to missing data	Bias in measurement of outcomes	Bias in selection of the reported result	Overall
42	Moderate risk	Low risk	Low risk	Low risk	Serious risk	Low risk	Moderate risk	Serious risk
44	Serious risk	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Serious risk
46	Moderate risk	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk
49	Moderate risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk	Moderate risk
50	Serious risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
54	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
61	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
63	Serious risk	Low risk	Low risk	Low risk	Serious risk	Serious risk	Moderate risk	Serious risk
66	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
68	Moderate risk	Low risk	Low risk	Low risk	Moderate risk	Low risk	Moderate risk	Moderate risk
70	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
73	Moderate risk	Moderate risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk
76	Moderate risk	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk
78	Moderate risk	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk

Study	Bias due to confounding	Bias in selection of participants	Bias in classification of interventions	Bias due to deviations from intended interventions	Bias due to missing data	Bias in measurement of outcomes	Bias in selection of the reported result	Overall
80	Moderate risk	Low risk	Low risk	Low risk	Moderate risk	Low risk	Moderate risk	Moderate risk
81	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
82	Serious risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Moderate risk	Serious risk
83	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
86	Moderate risk	Low risk	Low risk	Low risk	Serious risk	Serious risk	Moderate risk	Serious risk
87	Moderate risk	Low risk	Low risk	Low risk	Serious risk	Serious risk	Moderate risk	Serious risk
89	Moderate risk	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk
90	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
92	Moderate risk	Low risk	Low risk	Moderate risk	Low risk	Low risk	Moderate risk	Moderate risk
96	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
97	Moderate risk	Low risk	Low risk	Low risk	Low risk	Serious risk	Moderate risk	Serious risk
98	Moderate risk	Low risk	Low risk	Low risk	Serious risk	Serious risk	Moderate risk	Serious risk

B4. Efficacy across all and within individual outcome domains

B4.1 All outcome measures

The analysis of all outcome measures included 98 studies. The combined effect size was small and significant (g = 0.32, 95% CI 0.26 to 0.38, $tau^2 = 0.11$; **Figure B2**). The funnel plot did indicate evidence of small study effect (**Figure B3**), which was confirmed through formal testing (Egger's intercept = 1.22, p = 0.002). Adjusting for this effect (imputing 19 studies) resulted in a reduction in effect size (Hedges' g = 0.23, 95%CI 0.17 – 0.29, p < 0.001), although still small and statistically significant.

Figure B2.1. Forest plot of all outcome measures

Note: Figures B2.1-B2.3 comprise one figure, displayed across multiple pages to ensure readability. An accessible version of the data displayed in this figure is presented in Table B4 below.

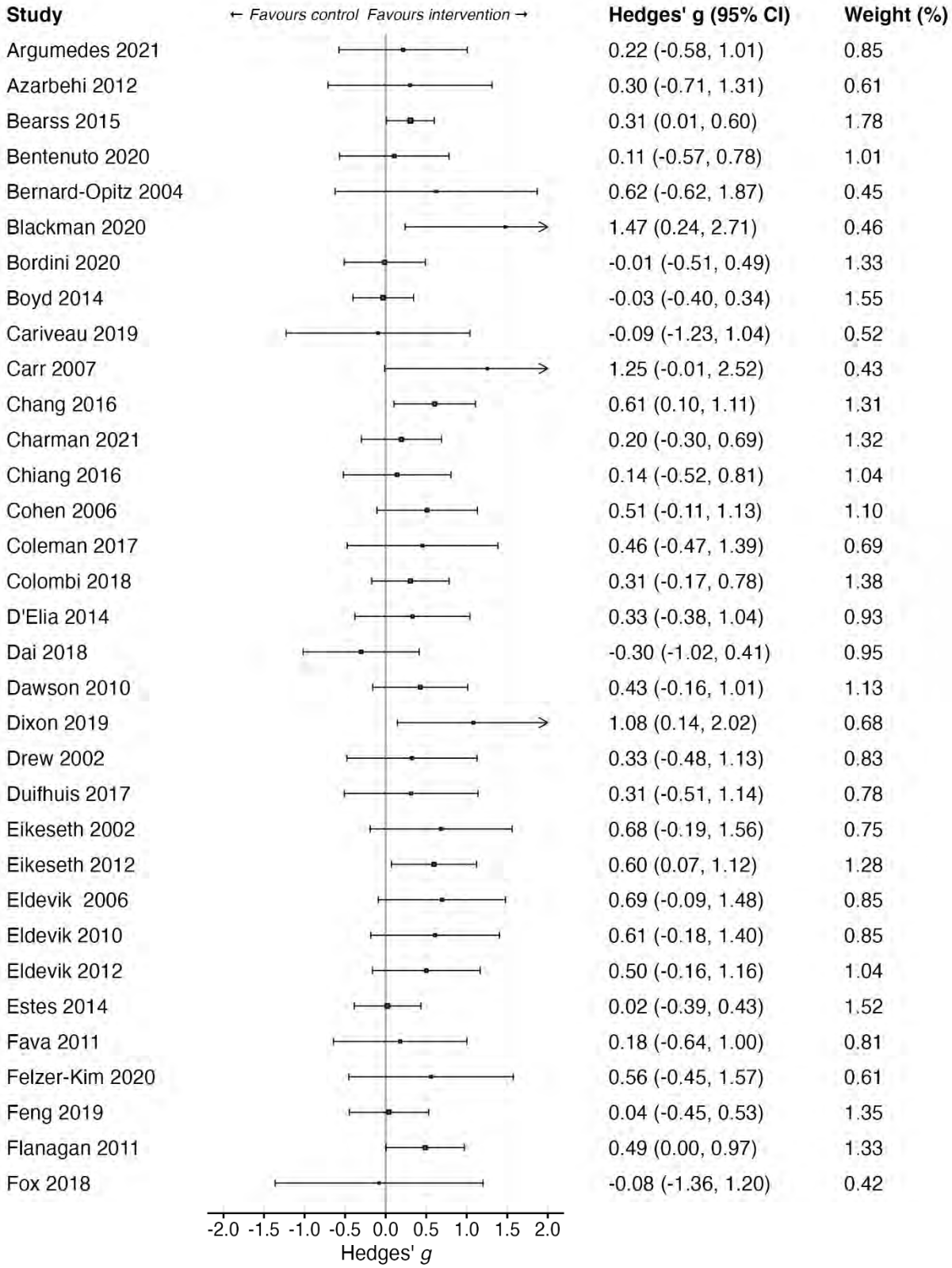


Figure B2.2. Forest plot of all outcomes

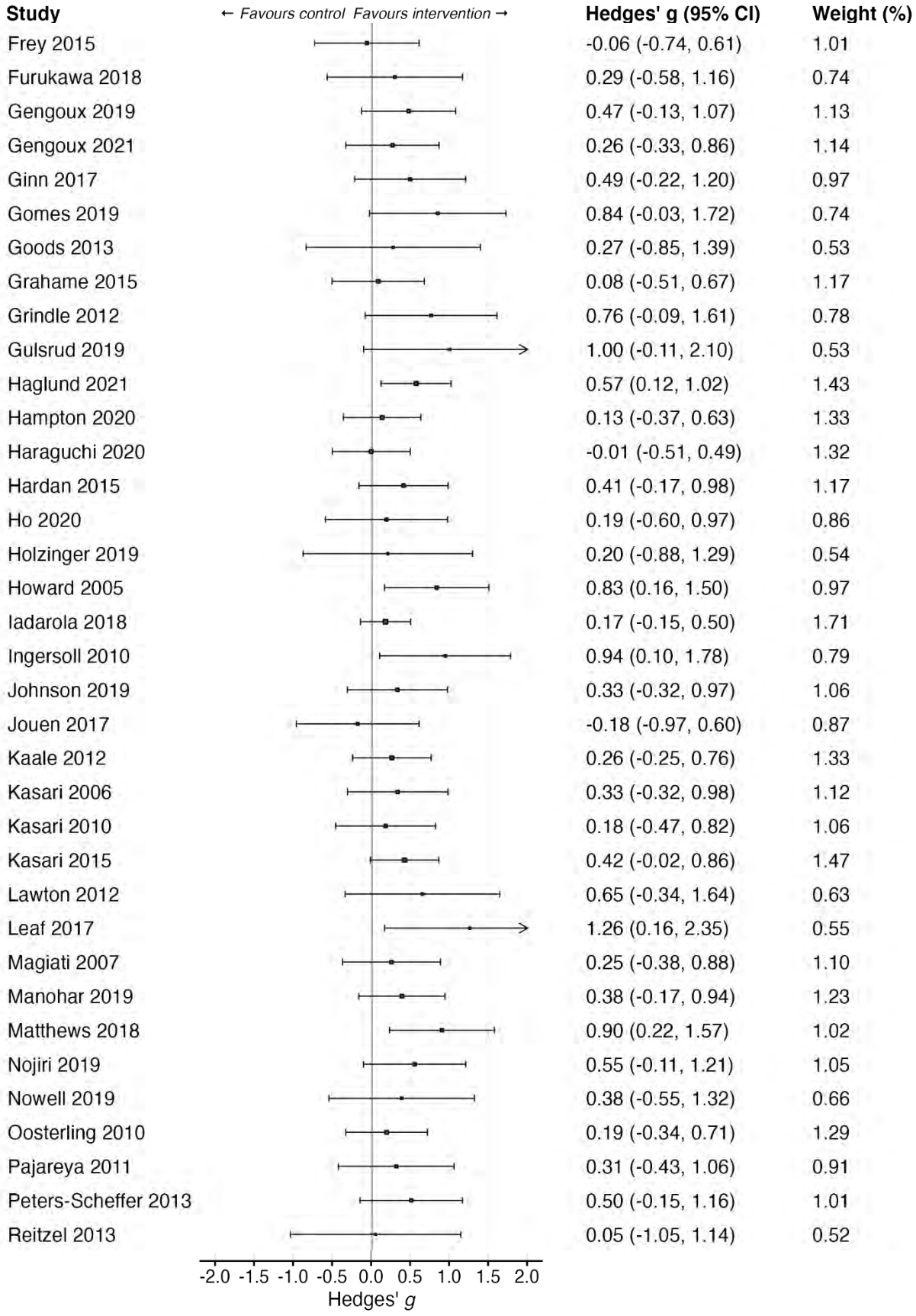


Figure B2.3. Forest plot of all outcomes

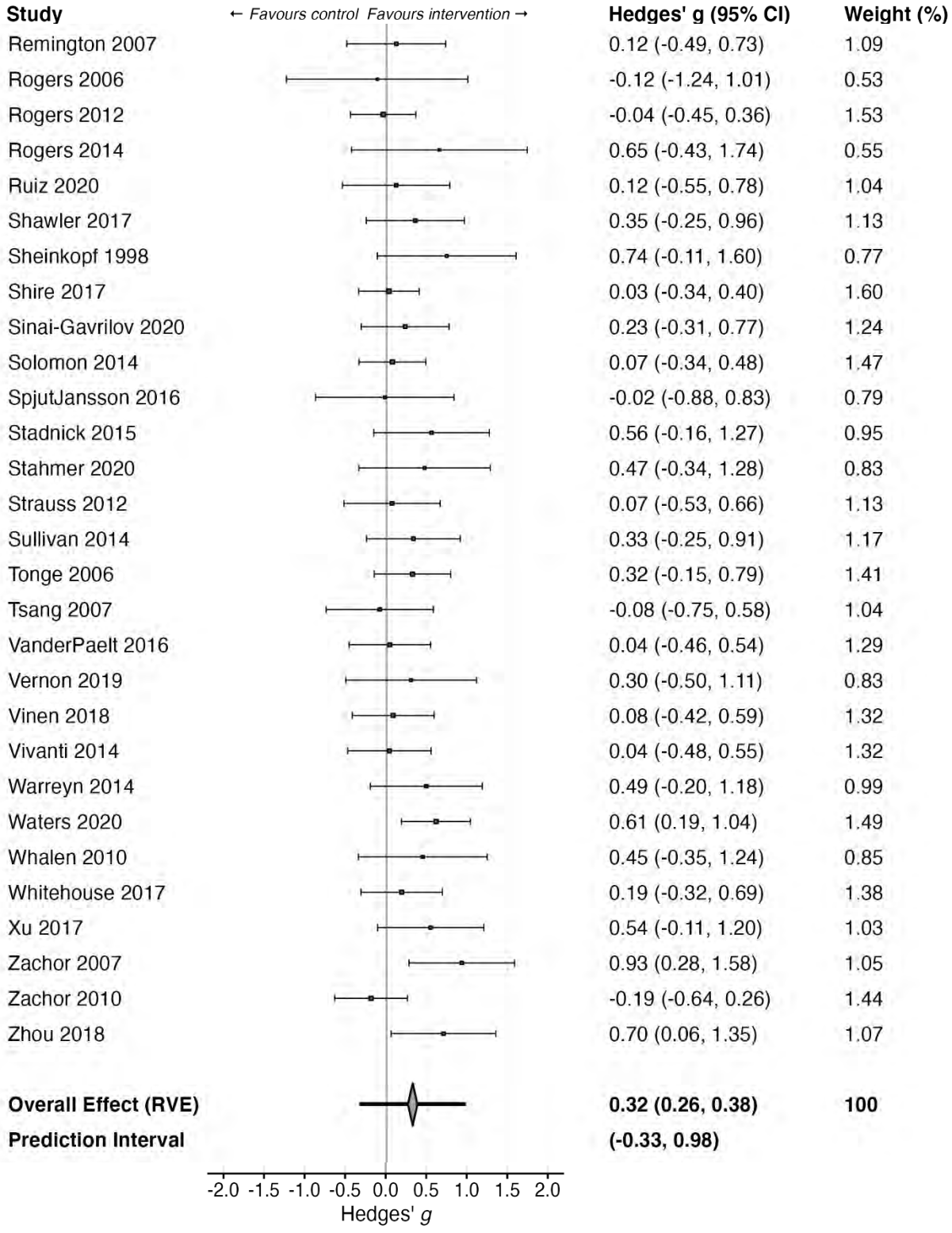


Table B4. Table version of forest plot of all outcome measures.

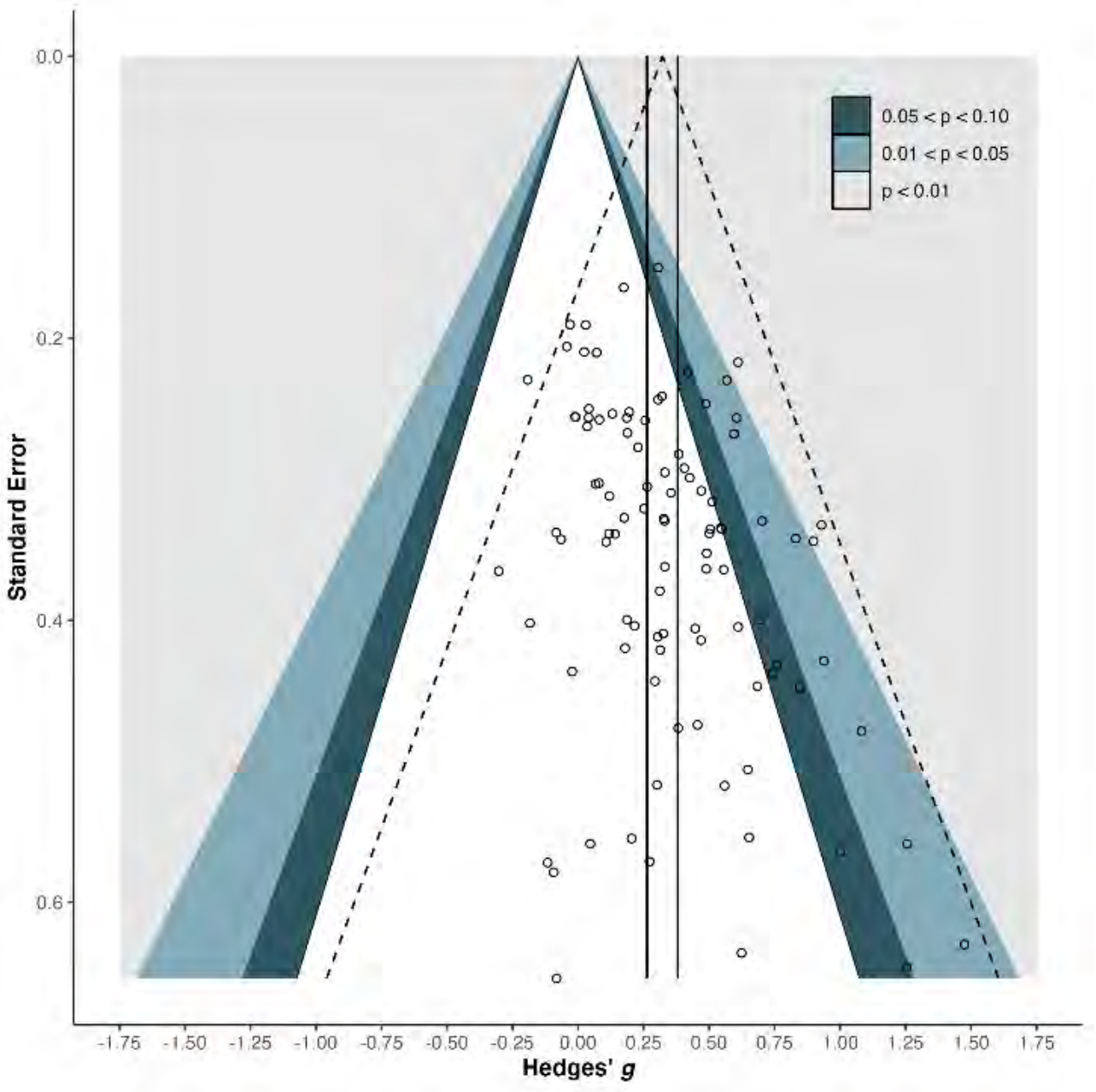
Note: This table presents the information displayed in Figure B2 in an accessible format. Positive Hedges' g values favour the behaviourally based intervention, negative Hedges' g values favour the comparison group.

Study	Hedges' g (95%CI)	Weight (%)
Argumedes 2021	0.22 (-0.58, 1.01)	0.85
Azarbehi 2012	0.30 (-0.71, 1.31)	0.61
Bearss 2015	0.31 (0.01, 0.60)	1.78
Bentenuto 2020	0.11 (-0.57, 0.78)	1.01
Bernard-Opitz 2004	0.62 (-0.62, 1.87)	0.45
Blackman 2020	1.47 (0.24, 2.71)	0.46
Bordini 2020	-0.01 (-0.51, 0.49)	1.33
Boyd 2014	-0.03 (-0.40, 0.34)	1.55
Cariveau 2019	-0.09 (-1.23, 1.04)	0.52
Carr 2007	1.25 (-0.01, 2.52)	0.43
Chang 2016	0.61 (0.10, 1.11)	1.31
Charman 2021	0.20 (-0.30, 0.69)	1.32
Chiang 2016	0.14 (-0.52, 0.81)	1.04
Cohen 2006	0.51 (-0.11, 1.13)	1.1
Coleman 2017	0.46 (-0.47, 1.39)	0.69
Colombi 2018	0.31 (-0.17, 0.78)	1.38
D'Elia 2014	0.33 (-0.38, 1.04)	0.93
Dai 2018	-0.30 (-1.02, 0.41)	0.95
Dawson 2010	0.43 (-0.16, 1.01)	1.13
Dixon 2019	1.08 (0.14, 2.02)	0.68
Drew 2002	0.33 (-0.48, 1.13)	0.83
Duifhuis 2017	0.31 (-0.51, 1.14)	0.78
Eikeseth 2002	0.68 (-0.19, 1.56)	0.75
Eikeseth 2012	0.60 (0.07, 1.12)	1.28
Eldevik 2006	0.69 (-0.09, 1.48)	0.85
Eldevik 2010	0.61 (-0.18, 1.40)	0.85
Eldevik 2012	0.50 (-0.16, 1.16)	1.04
Estes 2014	0.02 (-0.39, 0.43)	1.52
Fava 2011	0.18 (-0.64, 1.00)	0.81
Felzer-Kim 2020	0.56 (-0.45, 1.57)	0.61
Feng 2019	0.04 (-0.45, 0.53)	1.35
Flanagan 2011	0.49 (0.00, 0.97)	1.33
Fox 2018	-0.08 (-1.36, 1.20)	0.42
Frey 2015	-0.06 (-0.74, 0.61)	1.01
Furukawa 2018	0.29 (-0.58, 1.16)	0.74
Gengoux 2019	0.47 (-0.13, 1.07)	1.13
Gengoux 2021	0.26 (-0.33, 0.86)	1.14
Ginn 2017	0.49 (-0.22, 1.20)	0.97

Study	Hedges' g (95%CI)	Weight (%)
Gomes 2019	0.84 (-0.03, 1.72)	0.74
Goods 2013	0.27 (-0.85, 1.39)	0.53
Grahame 2015	0.08 (-0.51, 0.67)	1.17
Grindle 2012	0.76 (-0.09, 1.61)	0.78
Gulsrud 2019	1.00 (-0.11, 2.10)	0.53
Haglund 2021	0.57 (0.12, 1.02)	1.43
Hampton 2020	0.13 (-0.37, 0.63)	1.33
Haraguchi 2020	-0.01 (-0.51, 0.49)	1.32
Hardan 2015	0.41 (-0.17, 0.98)	1.17
Ho 2020	0.19 (-0.60, 0.97)	0.86
Holzinger 2019	0.20 (-0.88, 1.29)	0.54
Howard 2005	0.83 (0.16, 1.50)	0.97
Iadarola 2018	0.17 (-0.15, 0.50)	1.71
Ingersoll 2010	0.94 (0.10, 1.78)	0.79
Johnson 2019	0.33 (-0.32, 0.97)	1.06
Jouen 2017	-0.18 (-0.97, 0.60)	0.87
Kaale 2012	0.26 (-0.25, 0.76)	1.33
Kasari 2006	0.33 (-0.32, 0.98)	1.12
Kasari 2010	0.18 (-0.47, 0.82)	1.06
Kasari 2015	0.42 (-0.02, 0.86)	1.47
Lawton 2012	0.65 (-0.34, 1.64)	0.63
Leaf 2017	1.26 (0.16, 2.35)	0.55
Magiati 2007	0.25 (-0.38, 0.88)	1.1
Manohar 2019	0.38 (-0.17, 0.94)	1.23
Matthews 2018	0.90 (0.22, 1.57)	1.02
Nojiri 2019	0.55 (-0.11, 1.21)	1.05
Nowell 2019	0.38 (-0.55, 1.32)	0.66
Oosterling 2010	0.19 (-0.34, 0.71)	1.29
Pajareya 2011	0.31 (-0.43, 1.06)	0.91
Peters-Scheffer 2013	0.50 (-0.15, 1.16)	1.01
Reitzel 2013	0.05 (-1.05, 1.14)	0.52
Remington 2007	0.12 (-0.49, 0.73)	1.09
Rogers 2006	-0.12 (-1.24, 1.01)	0.53
Rogers 2012	-0.04 (-0.45, 0.36)	1.53
Rogers 2014	0.65 (-0.43, 1.74)	0.55
Ruiz 2020	0.12 (-0.55, 0.78)	1.04
Shawler 2017	0.35 (-0.25, 0.96)	1.13
Sheinkopf 1998	0.74 (-0.11, 1.60)	0.77
Shire 2017	0.03 (-0.34, 0.40)	1.6
Sinai-Gavrilov 2020	0.23 (-0.31, 0.77)	1.24
Solomon 2014	0.07 (-0.34, 0.48)	1.47
SpjutJansson 2016	-0.02 (-0.88, 0.83)	0.79
Stadnick 2015	0.56 (-0.16, 1.27)	0.95

Study	Hedges' g (95%CI)	Weight (%)
Stahmer 2020	0.47 (-0.34, 1.28)	0.83
Strauss 2012	0.07 (-0.53, 0.66)	1.13
Sullivan 2014	0.33 (-0.25, 0.91)	1.17
Tonge 2006	0.32 (-0.15, 0.79)	1.41
Tsang 2007	-0.08 (-0.75, 0.58)	1.04
VanderPaelt 2016	0.04 (-0.46, 0.54)	1.29
Vernon 2019	0.30 (-0.50, 1.11)	0.83
Vinen 2018	0.08 (-0.42, 0.59)	1.32
Vivanti 2014	0.04 (-0.48, 0.55)	1.32
Warreyn 2014	0.49 (-0.20, 1.18)	0.99
Waters 2020	0.61 (0.19, 1.04)	1.49
Whalen 2010	0.45 (-0.35, 1.24)	0.85
Whitehouse 2017	0.19 (-0.32, 0.69)	1.38
Xu 2017	0.54 (-0.11, 1.20)	1.03
Zachor 2007	0.93 (0.28, 1.58)	1.05
Zachor 2010	-0.19 (-0.64, 0.26)	1.44
Zhou 2018	0.70 (0.06, 1.35)	1.07
Overall Effect (RVE)	**0.32 (0.26, 0.38)**	**100**
Prediction Interval	**(-0.33, 0.98)**	**NA**

Figure B3. Funnel plot of all outcomes



B4.2 Autism characteristics

Autism characteristics outcomes were reported in 82 studies. The combined effect size was small and significant (g = 0.32, 95% CI 0.24 to 0.39, $tau^2 = 0.11$; **Figure B4**). The funnel plot did indicate evidence of small study effect (**Figure B5**), which was confirmed through formal testing (Egger's intercept = 1.22, p = 0.002). Adjusting for this effect (imputing 14 studies) resulted in a reduction in effect size (Hedges' g = 0.22, 95%CI 0.15 – 0.29, p < 0.001), although still small and statistically significant.

Figure B4.1. Forest plot of autism characteristic outcomes.

Note: Figures B4.1-B4.3 comprise one figure, displayed across multiple pages to ensure readability. An accessible version of the data displayed in this figure is presented in Table B5 below.

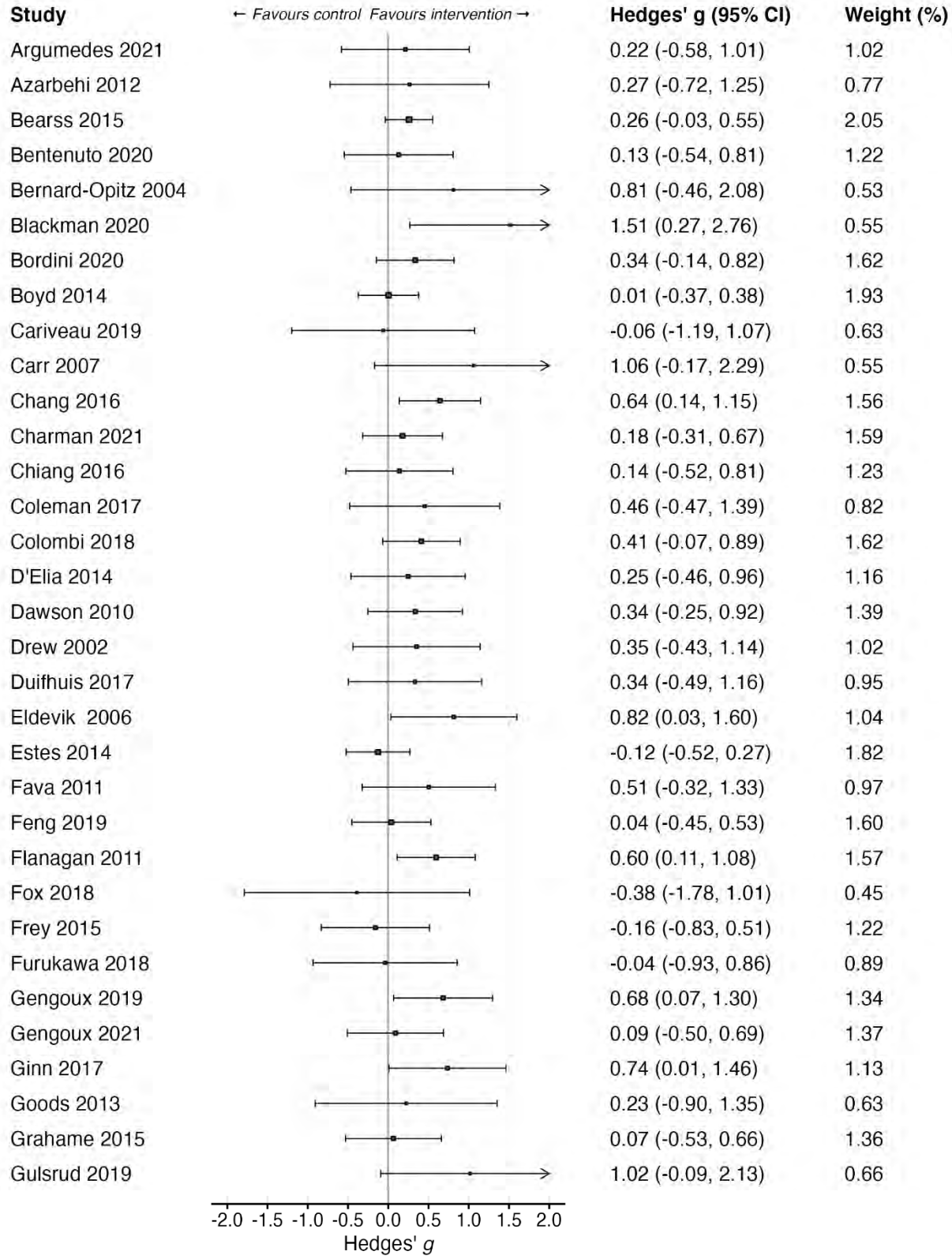


Figure B4.2: Forest plot of autism characteristic outcomes

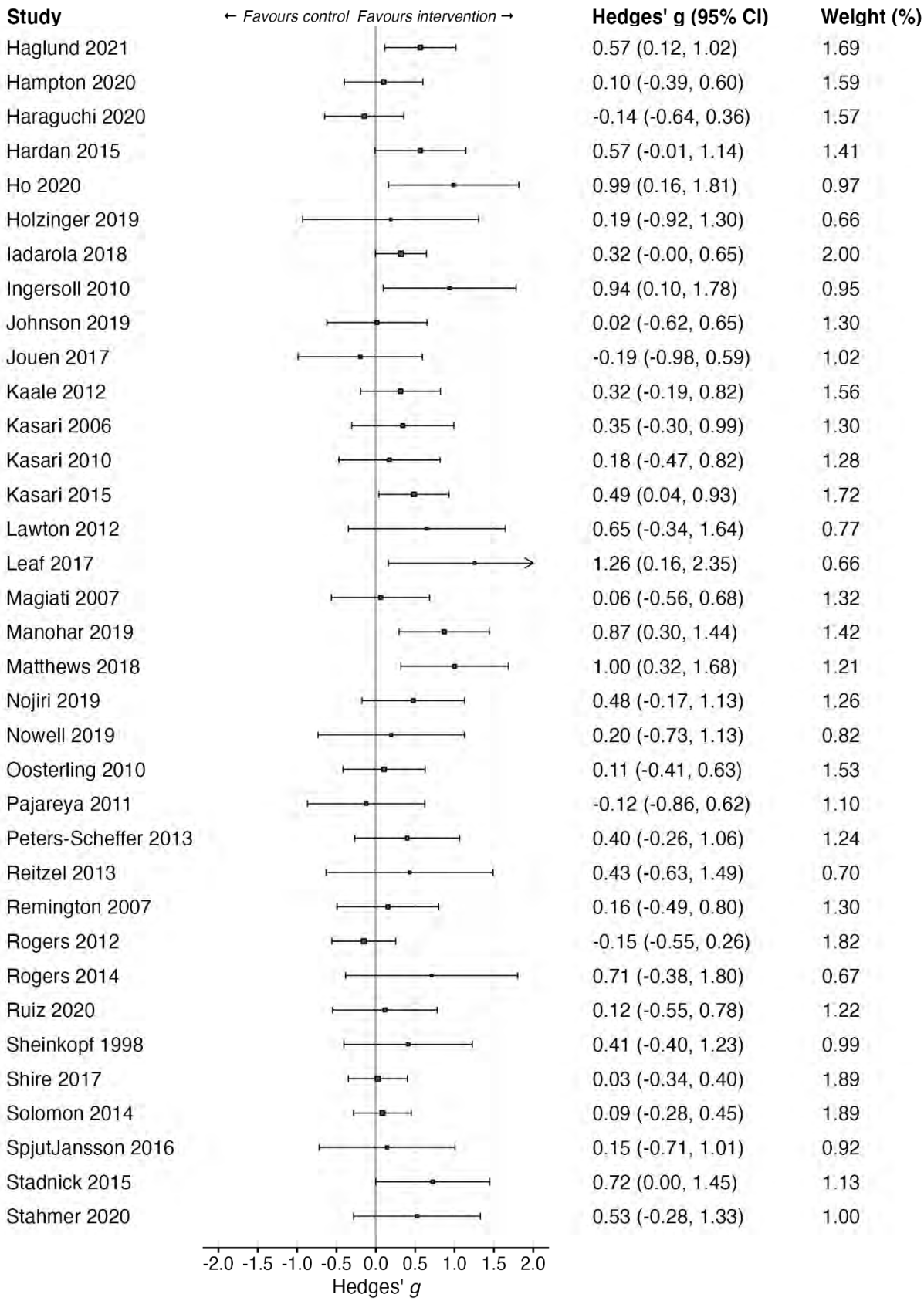


Figure B4.3: Forest plot of autism characteristic outcomes.

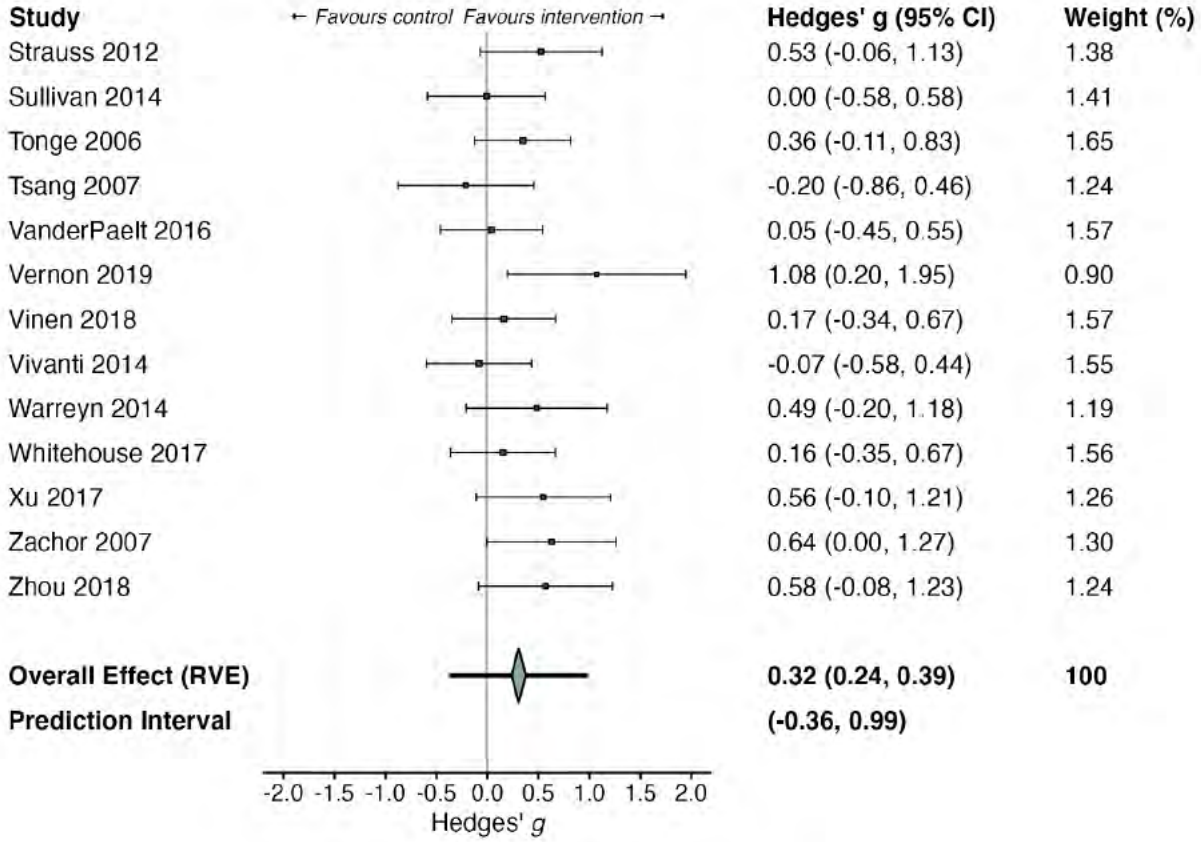


Table B5. Table version of forest plot of autism characteristic outcome measures.

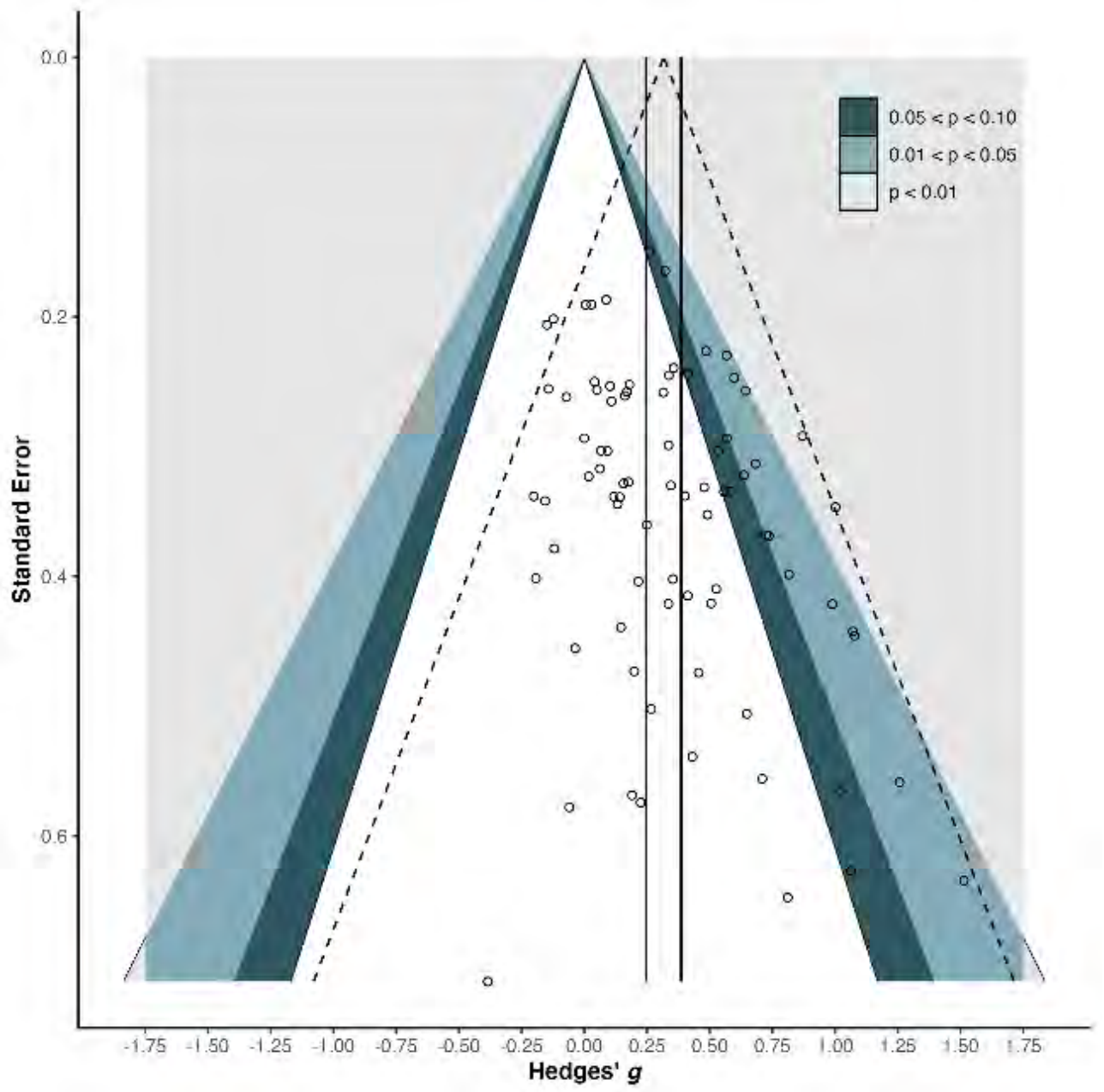
Note: This table presents the information displayed in Figure B4 in an accessible format. Positive Hedges' g values favour the behaviourally based intervention, negative Hedges' g values favour the comparison group.

Study	Hedges' g (95%CI)	Weight (%)
Argumedes 2021	0.22 (-0.58, 1.01)	1.02
Azarbehi 2012	0.27 (-0.72, 1.25)	0.77
Bearss 2015	0.26 (-0.03, 0.55)	2.05
Bentenuto 2020	0.13 (-0.54, 0.81)	1.22
Bernard-Opitz 2004	0.81 (-0.46, 2.08)	0.53
Blackman 2020	1.51 (0.27, 2.76)	0.55
Bordini 2020	0.34 (-0.14, 0.82)	1.62
Boyd 2014	0.01 (-0.37, 0.38)	1.93
Cariveau 2019	-0.06 (-1.19, 1.07)	0.63
Carr 2007	1.06 (-0.17, 2.29)	0.55
Chang 2016	0.64 (0.14, 1.15)	1.56
Charman 2021	0.18 (-0.31, 0.67)	1.59
Chiang 2016	0.14 (-0.52, 0.81)	1.23

Study	Hedges' g (95%CI)	Weight (%)
Coleman 2017	0.46 (-0.47, 1.39)	0.82
Colombi 2018	0.41 (-0.07, 0.89)	1.62
D'Elia 2014	0.25 (-0.46, 0.96)	1.16
Dawson 2010	0.34 (-0.25, 0.92)	1.39
Drew 2002	0.35 (-0.43, 1.14)	1.02
Duifhuis 2017	0.34 (-0.49, 1.16)	0.95
Eldevik 2006	0.82 (0.03, 1.60)	1.04
Estes 2014	-0.12 (-0.52, 0.27)	1.82
Fava 2011	0.51 (-0.32, 1.33)	0.97
Feng 2019	0.04 (-0.45, 0.53)	1.6
Flanagan 2011	0.60 (0.11, 1.08)	1.57
Fox 2018	-0.38 (-1.78, 1.01)	0.45
Frey 2015	-0.16 (-0.83, 0.51)	1.22
Furukawa 2018	-0.04 (-0.93, 0.86)	0.89
Gengoux 2019	0.68 (0.07, 1.30)	1.34
Gengoux 2021	0.09 (-0.50, 0.69)	1.37
Ginn 2017	0.74 (0.01, 1.46)	1.13
Goods 2013	0.23 (-0.90, 1.35)	0.63
Grahame 2015	0.07 (-0.53, 0.66)	1.36
Gulsrud 2019	1.02 (-0.09, 2.13)	0.66
Haglund 2021	0.57 (0.12, 1.02)	1.69
Hampton 2020	0.10 (-0.39, 0.60)	1.59
Haraguchi 2020	-0.14 (-0.64, 0.36)	1.57
Hardan 2015	0.57 (-0.01, 1.14)	1.41
Ho 2020	0.99 (0.16, 1.81)	0.97
Holzinger 2019	0.19 (-0.92, 1.30)	0.66
Iadarola 2018	0.32 (-0.00, 0.65)	2
Ingersoll 2010	0.94 (0.10, 1.78)	0.95
Johnson 2019	0.02 (-0.62, 0.65)	1.3
Jouen 2017	-0.19 (-0.98, 0.59)	1.02
Kaale 2012	0.32 (-0.19, 0.82)	1.56
Kasari 2006	0.35 (-0.30, 0.99)	1.3
Kasari 2010	0.18 (-0.47, 0.82)	1.28
Kasari 2015	0.49 (0.04, 0.93)	1.72
Lawton 2012	0.65 (-0.34, 1.64)	0.77
Leaf 2017	1.26 (0.16, 2.35)	0.66
Magiati 2007	0.06 (-0.56, 0.68)	1.32
Manohar 2019	0.87 (0.30, 1.44)	1.42
Matthews 2018	1.00 (0.32, 1.68)	1.21
Nojiri 2019	0.48 (-0.17, 1.13)	1.26
Nowell 2019	0.20 (-0.73, 1.13)	0.82
Oosterling 2010	0.11 (-0.41, 0.63)	1.53
Pajareya 2011	-0.12 (-0.86, 0.62)	1.1

Study	Hedges' g (95%CI)	Weight (%)
Peters-Scheffer 2013	0.40 (-0.26, 1.06)	1.24
Reitzel 2013	0.43 (-0.63, 1.49)	0.7
Remington 2007	0.16 (-0.49, 0.80)	1.3
Rogers 2012	-0.15 (-0.55, 0.26)	1.82
Rogers 2014	0.71 (-0.38, 1.80)	0.67
Ruiz 2020	0.12 (-0.55, 0.78)	1.22
Sheinkopf 1998	0.41 (-0.40, 1.23)	0.99
Shire 2017	0.03 (-0.34, 0.40)	1.89
Solomon 2014	0.09 (-0.28, 0.45)	1.89
SpjutJansson 2016	0.15 (-0.71, 1.01)	0.92
Stadnick 2015	0.72 (0.00, 1.45)	1.13
Stahmer 2020	0.53 (-0.28, 1.33)	1
Strauss 2012	0.53 (-0.06, 1.13)	1.38
Sullivan 2014	0.00 (-0.58, 0.58)	1.41
Tonge 2006	0.36 (-0.11, 0.83)	1.65
Tsang 2007	-0.20 (-0.86, 0.46)	1.24
VanderPaelt 2016	0.05 (-0.45, 0.55)	1.57
Vernon 2019	1.08 (0.20, 1.95)	0.9
Vinen 2018	0.17 (-0.34, 0.67)	1.57
Vivanti 2014	-0.07 (-0.58, 0.44)	1.55
Warreyn 2014	0.49 (-0.20, 1.18)	1.19
Whitehouse 2017	0.16 (-0.35, 0.67)	1.56
Xu 2017	0.56 (-0.10, 1.21)	1.26
Zachor 2007	0.64 (0.00, 1.27)	1.3
Zhou 2018	0.58 (-0.08, 1.23)	1.24
Overall Effect (RVE)	**0.32 (0.24, 0.39)**	**100**
Prediction Interval	**(-0.36, 0.99)**	**NA**

Figure B5. Funnel plot of autism characteristic outcomes



B4.3 Adaptive functioning

Adaptive functioning outcomes were reported by 47 studies. The combined effect size was small and significant (g = 0.24, 95% CI 0.12 to 0.36, $tau^2 = 0.09$; **Figure B6**). The funnel plot did not indicate evidence of small study effect (**Figure B7**), which was confirmed through formal testing (Egger's intercept = 0.73, p = 0.255).

Figure B6.1. Forest plot of adaptive functioning outcomes

Note: Figures B6.1-B6.2 comprise one figure, displayed across multiple pages to ensure readability. An accessible version of the data displayed in this figure is presented in Table B6 below.

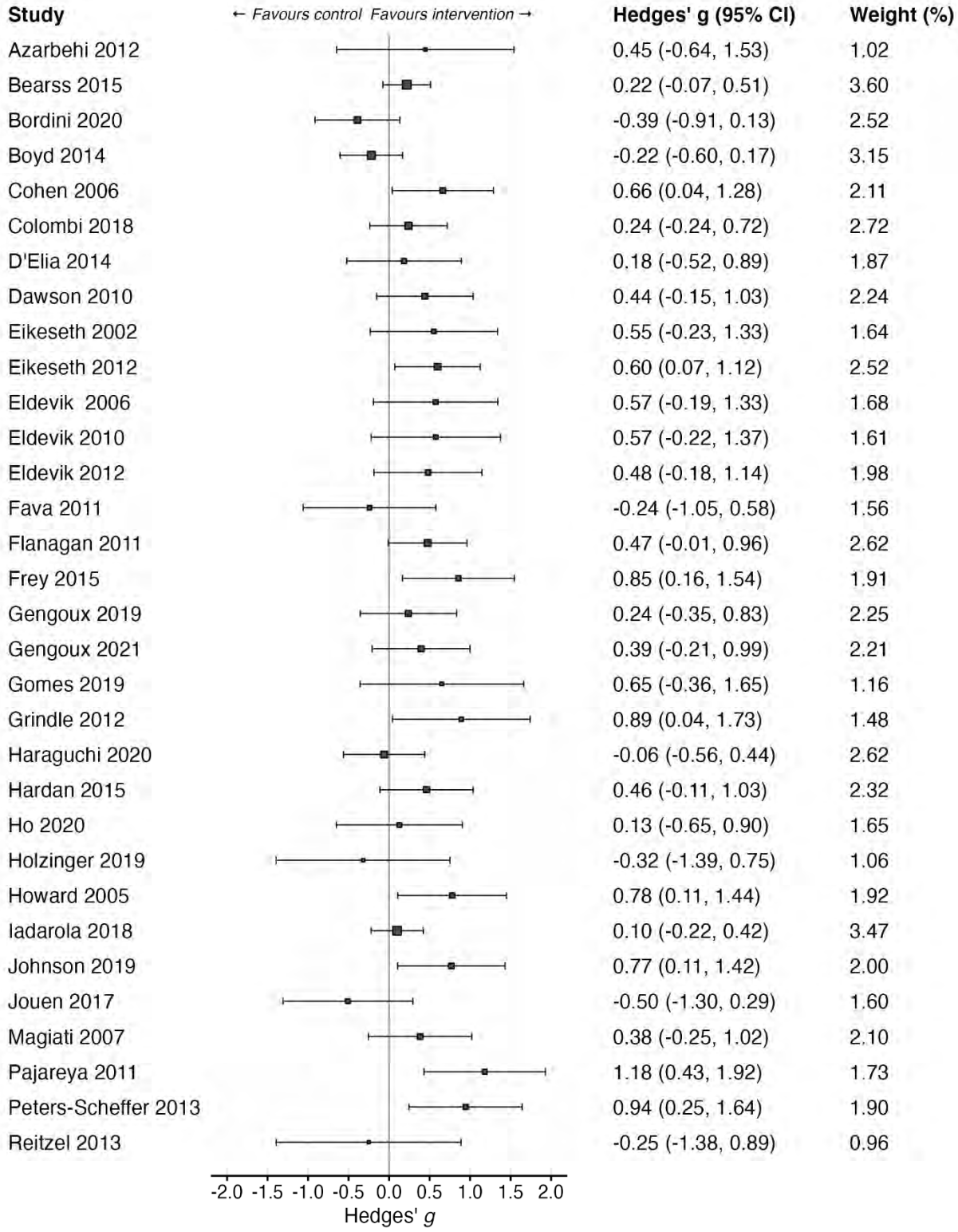


Figure B6.2. Forest plot of adaptive functioning outcomes

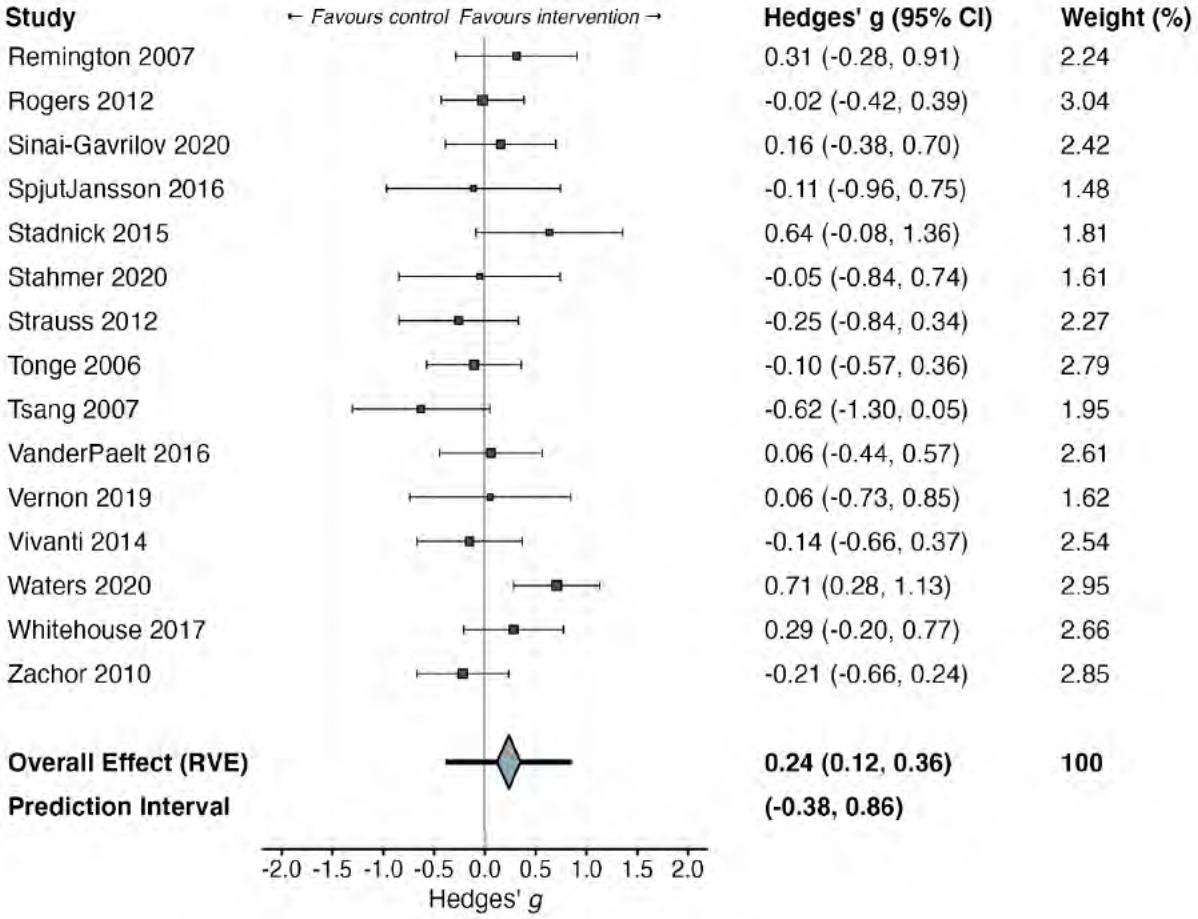


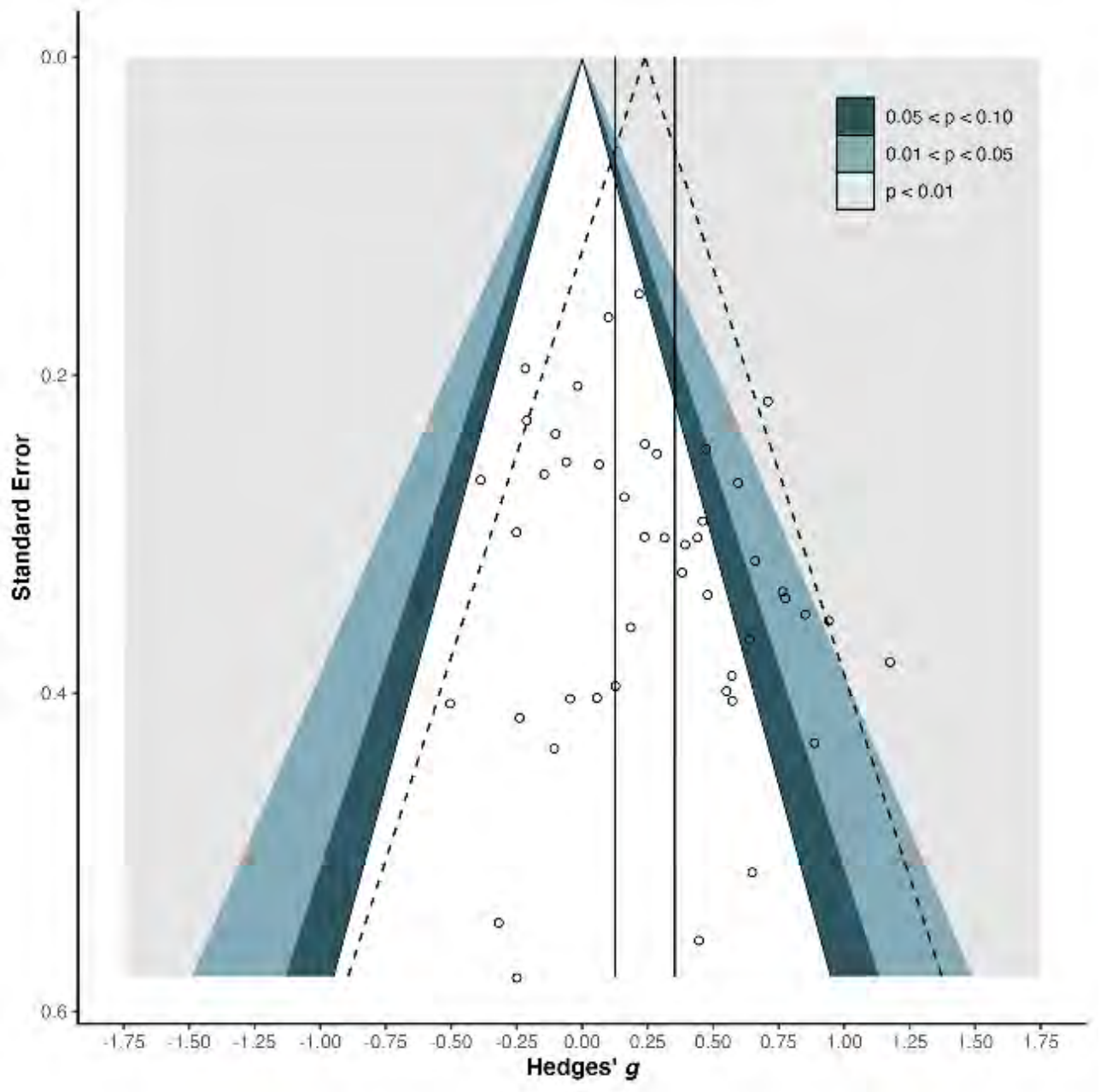
Table B6. Table version of forest plot of adaptive functioning outcome measures.

Note: This table presents the information displayed in Figure B6 in an accessible format. Positive Hedges' g values favour the behaviourally based intervention, negative Hedges' g values favour the comparison group.

Study	Hedges' g (95%CI)	Weight (%)
Azarbehi 2012	0.45 (-0.64, 1.53)	1.02
Bearss 2015	0.22 (-0.07, 0.51)	3.6
Bordini 2020	-0.39 (-0.91, 0.13)	2.52
Boyd 2014	-0.22 (-0.60, 0.17)	3.15
Cohen 2006	0.66 (0.04, 1.28)	2.11
Colombi 2018	0.24 (-0.24, 0.72)	2.72
D'Elia 2014	0.18 (-0.52, 0.89)	1.87
Dawson 2010	0.44 (-0.15, 1.03)	2.24
Eikeseth 2002	0.55 (-0.23, 1.33)	1.64
Eikeseth 2012	0.60 (0.07, 1.12)	2.52
Eldevik 2006	0.57 (-0.19, 1.33)	1.68

Study	Hedges' g (95%CI)	Weight (%)
Eldevik 2010	0.57 (-0.22, 1.37)	1.61
Eldevik 2012	0.48 (-0.18, 1.14)	1.98
Fava 2011	-0.24 (-1.05, 0.58)	1.56
Flanagan 2011	0.47 (-0.01, 0.96)	2.62
Frey 2015	0.85 (0.16, 1.54)	1.91
Gengoux 2019	0.24 (-0.35, 0.83)	2.25
Gengoux 2021	0.39 (-0.21, 0.99)	2.21
Gomes 2019	0.65 (-0.36, 1.65)	1.16
Grindle 2012	0.89 (0.04, 1.73)	1.48
Haraguchi 2020	-0.06 (-0.56, 0.44)	2.62
Hardan 2015	0.46 (-0.11, 1.03)	2.32
Ho 2020	0.13 (-0.65, 0.90)	1.65
Holzinger 2019	-0.32 (-1.39, 0.75)	1.06
Howard 2005	0.78 (0.11, 1.44)	1.92
Iadarola 2018	0.10 (-0.22, 0.42)	3.47
Johnson 2019	0.77 (0.11, 1.42)	2
Jouen 2017	-0.50 (-1.30, 0.29)	1.6
Magiati 2007	0.38 (-0.25, 1.02)	2.1
Pajareya 2011	1.18 (0.43, 1.92)	1.73
Peters-Scheffer 2013	0.94 (0.25, 1.64)	1.9
Reitzel 2013	-0.25 (-1.38, 0.89)	0.96
Remington 2007	0.31 (-0.28, 0.91)	2.24
Rogers 2012	-0.02 (-0.42, 0.39)	3.04
Sinai-Gavrilov 2020	0.16 (-0.38, 0.70)	2.42
SpjutJansson 2016	-0.11 (-0.96, 0.75)	1.48
Stadnick 2015	0.64 (-0.08, 1.36)	1.81
Stahmer 2020	-0.05 (-0.84, 0.74)	1.61
Strauss 2012	-0.25 (-0.84, 0.34)	2.27
Tonge 2006	-0.10 (-0.57, 0.36)	2.79
Tsang 2007	-0.62 (-1.30, 0.05)	1.95
VanderPaelt 2016	0.06 (-0.44, 0.57)	2.61
Vernon 2019	0.06 (-0.73, 0.85)	1.62
Vivanti 2014	-0.14 (-0.66, 0.37)	2.54
Waters 2020	0.71 (0.28, 1.13)	2.95
Whitehouse 2017	0.29 (-0.20, 0.77)	2.66
Zachor 2010	-0.21 (-0.66, 0.24)	2.85
Overall Effect (RVE)	**0.24 (0.12, 0.36)**	**100**
Prediction Interval	**(-0.38, 0.86)**	**NA**

Figure B7. Funnel plot of adaptive functioning outcomes



B4.4 Cognition and language

Cognition and language outcomes were reported by 64 studies. The combined effect size was small and significant (g = 0.30, 95% CI 0.22 to 0.38, $tau^2 = 0.05$; **Figure B8**). The funnel plot did indicate evidence of small study effect (**Figure B9**), which was confirmed through formal testing (Egger's intercept = 1.63, $p < 0.001$). Adjusting for this effect (imputing 15 studies) resulting in a reduction in effect size (Hedges' g = 0.19, 95%CI 0.10 – 0.28, $p < 0.001$), although still small and statistically significant.

Figure B8.1. Forest plot of cognition outcomes

Note: Figures B8.1-B8.2 comprise one figure, displayed across multiple pages to ensure readability. An accessible version of the data displayed in this figure is presented in Table B7 below.

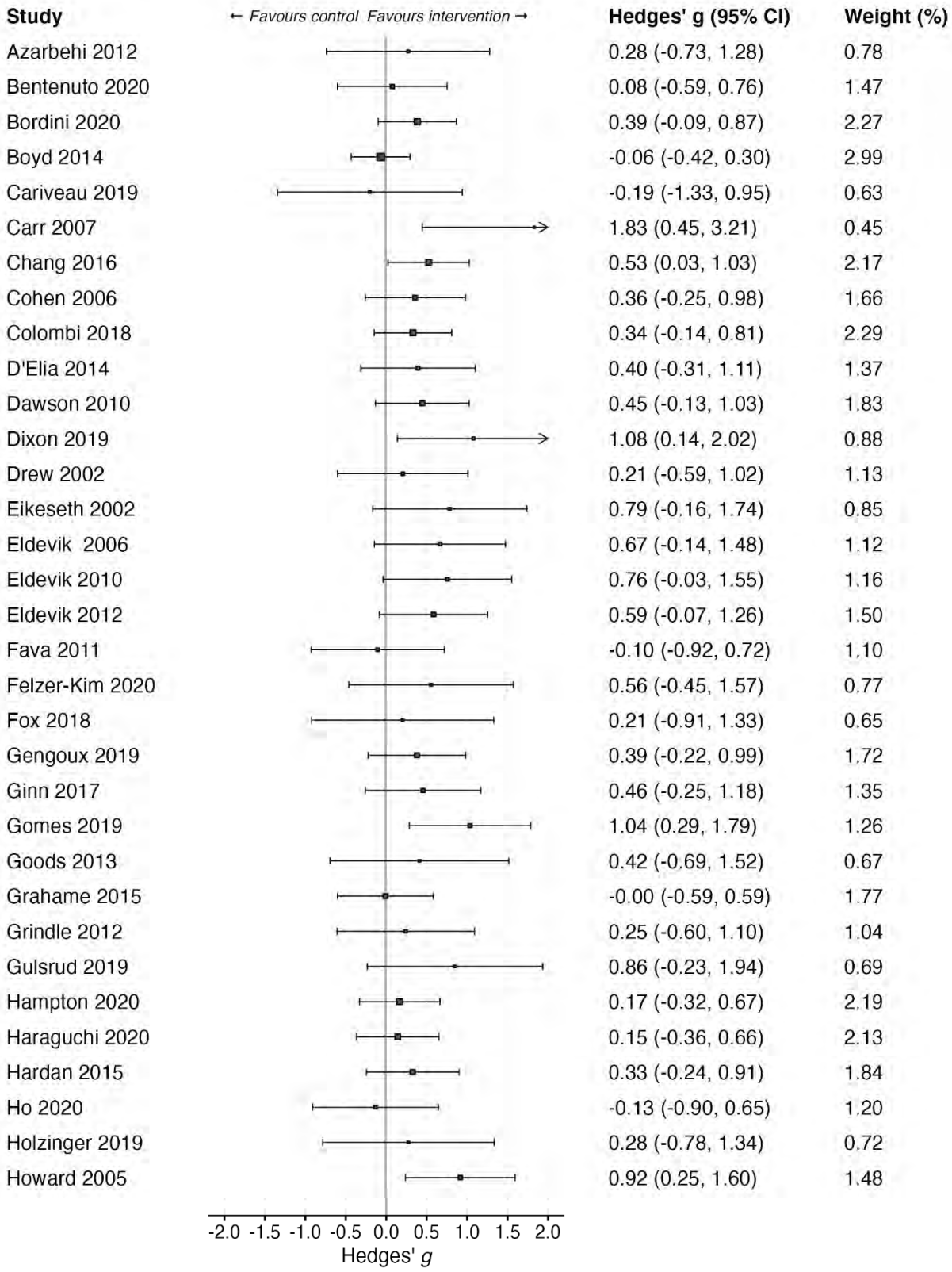


Figure B8.2. Forest plot of cognition outcomes

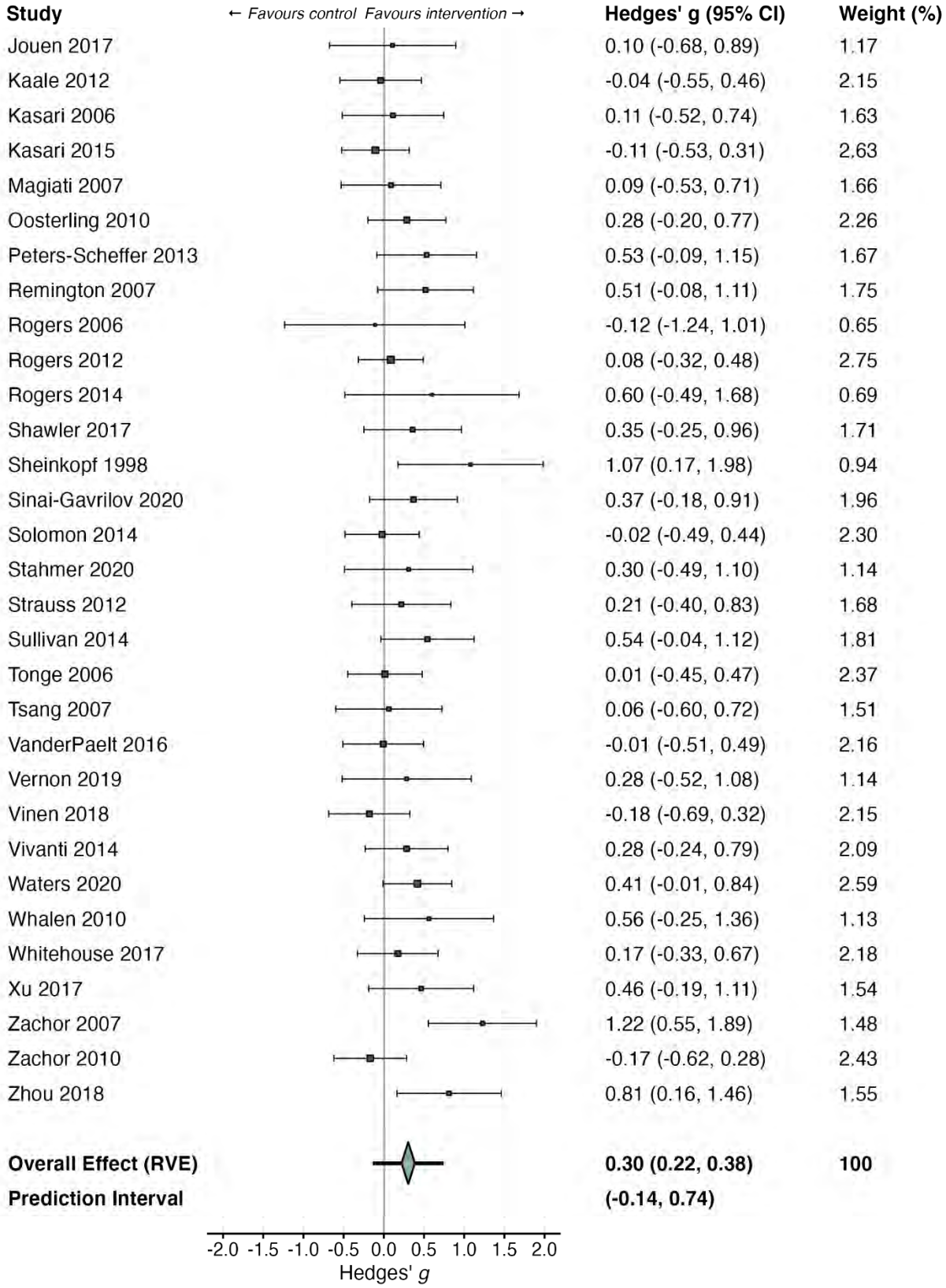


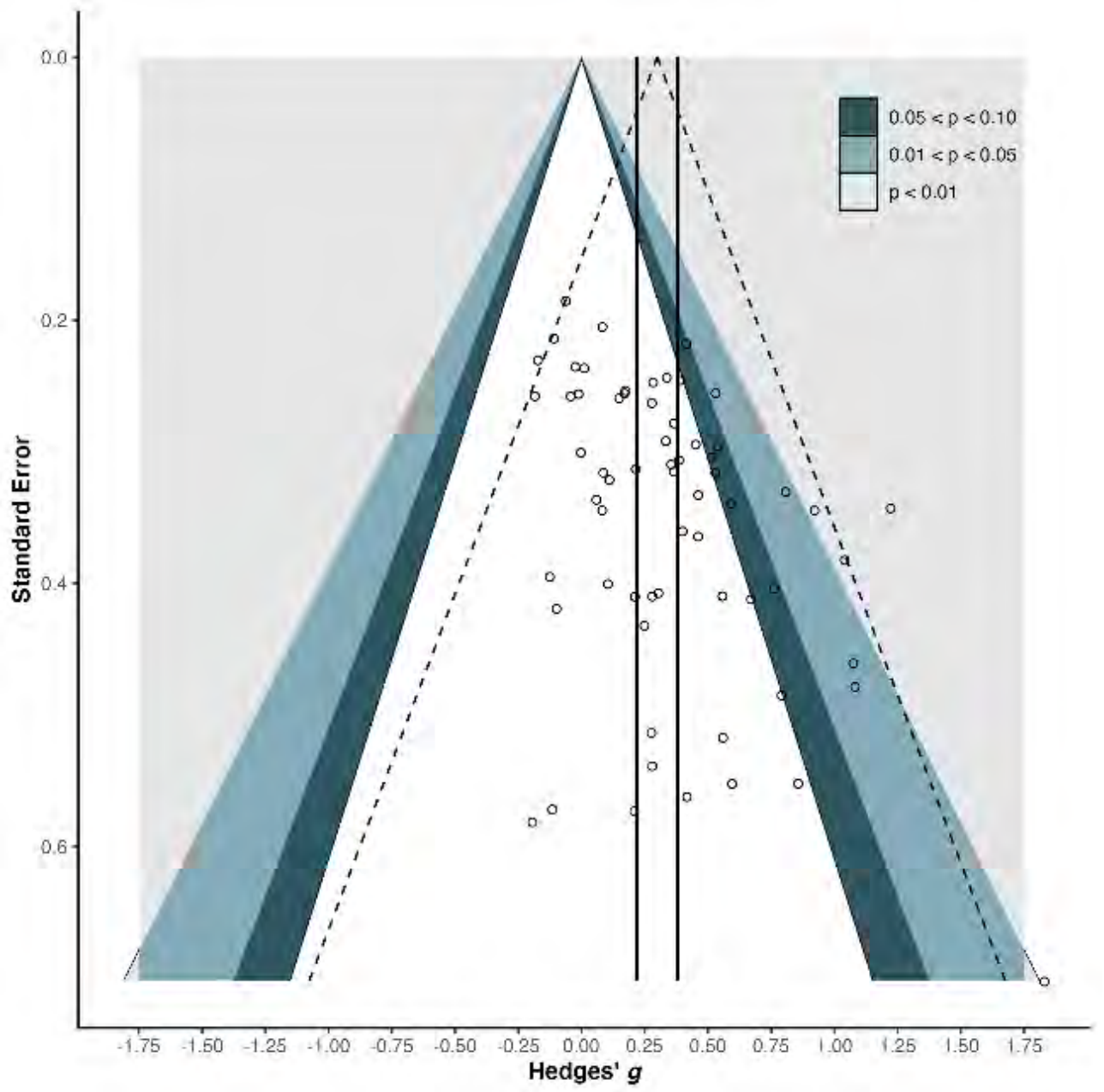
Table B7. Table version of forest plot of cognition and language outcome measures.

Note: This table presents the information displayed in Figure B8 in an accessible format. Positive Hedges' g values favour the behaviourally based intervention, negative Hedges' g values favour the comparison group.

Study	Hedges' g (95%CI)	Weight (%)
Azarbehi 2012	0.28 (-0.73, 1.28)	0.78
Bentenuto 2020	0.08 (-0.59, 0.76)	1.47
Bordini 2020	0.39 (-0.09, 0.87)	2.27
Boyd 2014	-0.06 (-0.42, 0.30)	2.99
Cariveau 2019	-0.19 (-1.33, 0.95)	0.63
Carr 2007	1.83 (0.45, 3.21)	0.45
Chang 2016	0.53 (0.03, 1.03)	2.17
Cohen 2006	0.36 (-0.25, 0.98)	1.66
Colombi 2018	0.34 (-0.14, 0.81)	2.29
D'Elia 2014	0.40 (-0.31, 1.11)	1.37
Dawson 2010	0.45 (-0.13, 1.03)	1.83
Dixon 2019	1.08 (0.14, 2.02)	0.88
Drew 2002	0.21 (-0.59, 1.02)	1.13
Eikeseth 2002	0.79 (-0.16, 1.74)	0.85
Eldevik 2006	0.67 (-0.14, 1.48)	1.12
Eldevik 2010	0.76 (-0.03, 1.55)	1.16
Eldevik 2012	0.59 (-0.07, 1.26)	1.5
Fava 2011	-0.10 (-0.92, 0.72)	1.1
Felzer-Kim 2020	0.56 (-0.45, 1.57)	0.77
Fox 2018	0.21 (-0.91, 1.33)	0.65
Gengoux 2019	0.39 (-0.22, 0.99)	1.72
Ginn 2017	0.46 (-0.25, 1.18)	1.35
Gomes 2019	1.04 (0.29, 1.79)	1.26
Goods 2013	0.42 (-0.69, 1.52)	0.67
Grahame 2015	-0.00 (-0.59, 0.59)	1.77
Grindle 2012	0.25 (-0.60, 1.10)	1.04
Gulsrud 2019	0.86 (-0.23, 1.94)	0.69
Hampton 2020	0.17 (-0.32, 0.67)	2.19
Haraguchi 2020	0.15 (-0.36, 0.66)	2.13
Hardan 2015	0.33 (-0.24, 0.91)	1.84
Ho 2020	-0.13 (-0.90, 0.65)	1.2
Holzinger 2019	0.28 (-0.78, 1.34)	0.72
Howard 2005	0.92 (0.25, 1.60)	1.48
Jouen 2017	0.10 (-0.68, 0.89)	1.17
Kaale 2012	-0.04 (-0.55, 0.46)	2.15
Kasari 2006	0.11 (-0.52, 0.74)	1.63
Kasari 2015	-0.11 (-0.53, 0.31)	2.63
Magiati 2007	0.09 (-0.53, 0.71)	1.66

Study	Hedges' g (95%CI)	Weight (%)
Oosterling 2010	0.28 (-0.20, 0.77)	2.26
Peters-Scheffer 2013	0.53 (-0.09, 1.15)	1.67
Remington 2007	0.51 (-0.08, 1.11)	1.75
Rogers 2006	-0.12 (-1.24, 1.01)	0.65
Rogers 2012	0.08 (-0.32, 0.48)	2.75
Rogers 2014	0.60 (-0.49, 1.68)	0.69
Shawler 2017	0.35 (-0.25, 0.96)	1.71
Sheinkopf 1998	1.07 (0.17, 1.98)	0.94
Sinai-Gavrilov 2020	0.37 (-0.18, 0.91)	1.96
Solomon 2014	-0.02 (-0.49, 0.44)	2.3
Stahmer 2020	0.30 (-0.49, 1.10)	1.14
Strauss 2012	0.21 (-0.40, 0.83)	1.68
Sullivan 2014	0.54 (-0.04, 1.12)	1.81
Tonge 2006	0.01 (-0.45, 0.47)	2.37
Tsang 2007	0.06 (-0.60, 0.72)	1.51
VanderPaelt 2016	-0.01 (-0.51, 0.49)	2.16
Vernon 2019	0.28 (-0.52, 1.08)	1.14
Vinen 2018	-0.18 (-0.69, 0.32)	2.15
Vivanti 2014	0.28 (-0.24, 0.79)	2.09
Waters 2020	0.41 (-0.01, 0.84)	2.59
Whalen 2010	0.56 (-0.25, 1.36)	1.13
Whitehouse 2017	0.17 (-0.33, 0.67)	2.18
Xu 2017	0.46 (-0.19, 1.11)	1.54
Zachor 2007	1.22 (0.55, 1.89)	1.48
Zachor 2010	-0.17 (-0.62, 0.28)	2.43
Zhou 2018	0.81 (0.16, 1.46)	1.55
Overall Effect (RVE)	**0.30 (0.22, 0.38)**	**100**
Prediction Interval	**(-0.14, 0.74)**	**NA**

Figure B9. Funnel plot of cognition and language outcomes



B4.5 Family outcomes

Family outcomes were reported by 20 studies. The combined effect size was small and significant (g = 0.39, 95% CI 0.21 to 0.58, $tau^2 = 0.18$; **Figure B10**). The funnel plot did not indicate evidence of small study effect (**Figure B11**), which was confirmed through formal testing (Egger's intercept = 0.48, p = 0.533).

Figure B10. Forest plot of family outcomes

Note: An accessible version of the data displayed in this figure is presented in Table B8 below.

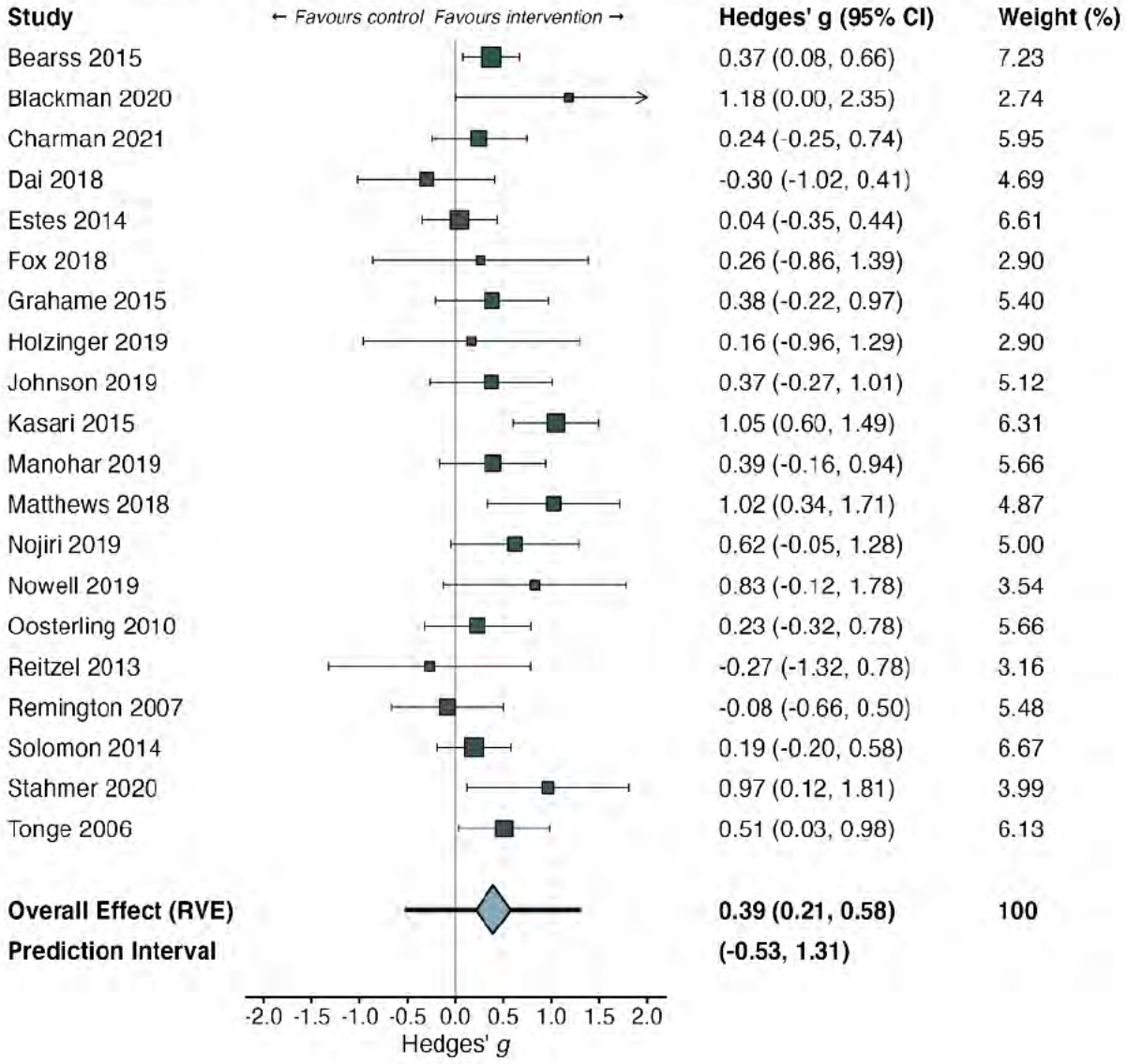


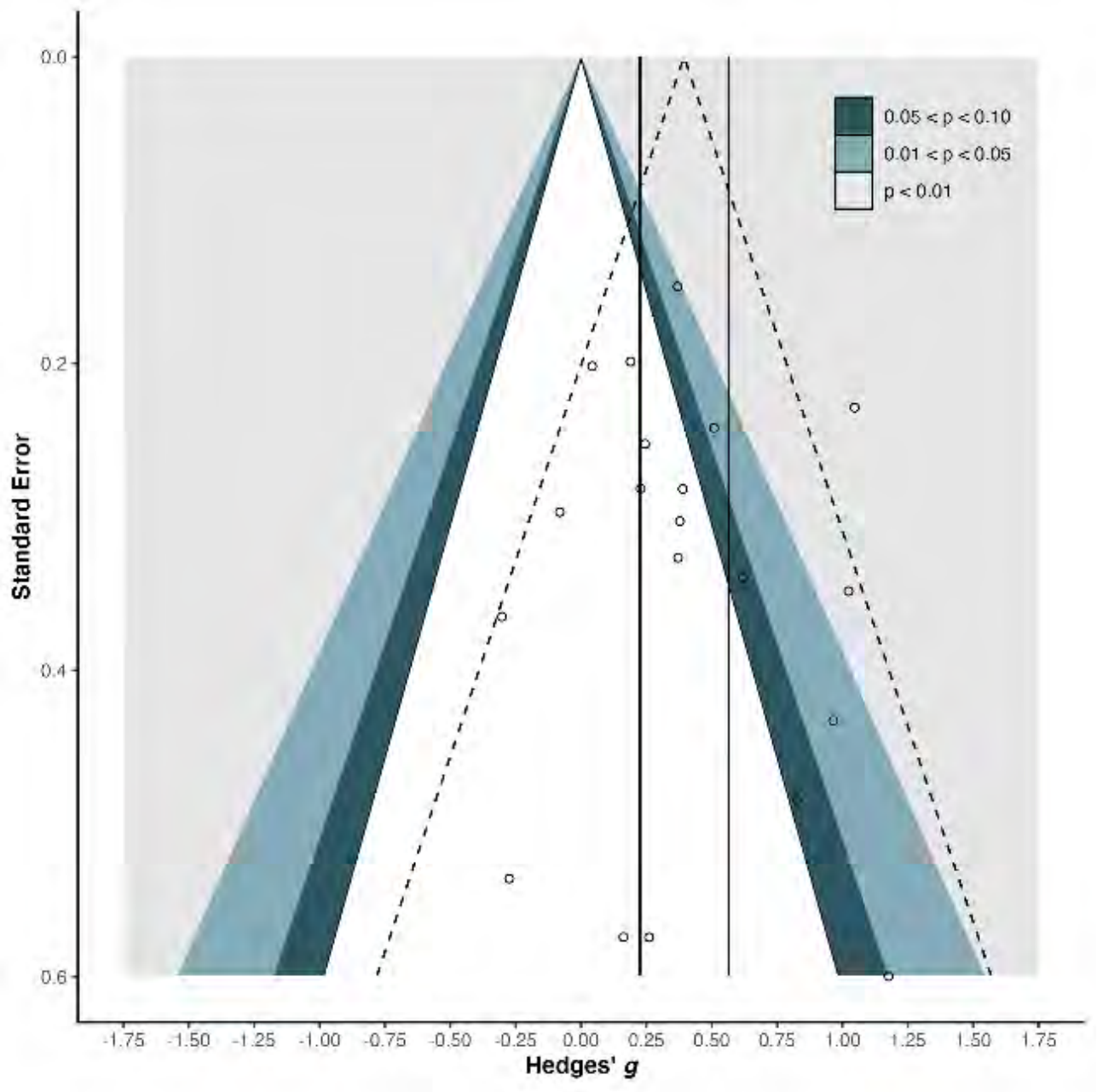
Table B8. Table version of forest plot of family outcome outcome measures.

Note: This table presents the information displayed in Figure B10 in an accessible format. Positive Hedges' g values favour the behaviourally based intervention, negative Hedges' g values favour the comparison group.

Study	Hedges' g (95%CI)	Weight (%)
Bearss 2015	0.37 (0.08, 0.66)	7.23
Blackman 2020	1.18 (0.00, 2.35)	2.74
Charman 2021	0.24 (-0.25, 0.74)	5.95
Dai 2018	-0.30 (-1.02, 0.41)	4.69
Estes 2014	0.04 (-0.35, 0.44)	6.61

Study	Hedges' g (95%CI)	Weight (%)
Fox 2018	0.26 (-0.86, 1.39)	2.9
Grahame 2015	0.38 (-0.22, 0.97)	5.4
Holzinger 2019	0.16 (-0.96, 1.29)	2.9
Johnson 2019	0.37 (-0.27, 1.01)	5.12
Kasari 2015	1.05 (0.60, 1.49)	6.31
Manohar 2019	0.39 (-0.16, 0.94)	5.66
Matthews 2018	1.02 (0.34, 1.71)	4.87
Nojiri 2019	0.62 (-0.05, 1.28)	5
Nowell 2019	0.83 (-0.12, 1.78)	3.54
Oosterling 2010	0.23 (-0.32, 0.78)	5.66
Reitzel 2013	-0.27 (-1.32, 0.78)	3.16
Remington 2007	-0.08 (-0.66, 0.50)	5.48
Solomon 2014	0.19 (-0.20, 0.58)	6.67
Stahmer 2020	0.97 (0.12, 1.81)	3.99
Tonge 2006	0.51 (0.03, 0.98)	6.13
Overall Effect (RVE)	**0.39 (0.21, 0.58)**	**100**
Prediction Interval	**(-0.53, 1.31)**	**NA**

Figure B11. Funnel plot of family outcomes



B4.6 Adverse effects

Adverse effects outcomes were reported by 27 studies. The combined effect size was small and significant (g = 0.24, 95% CI 0.09 to 0.39, $tau^2 = 0.09$; **Figure B12**). The funnel plot did not indicate evidence of small study effect (**Figure B13**), which was confirmed through formal testing (Egger's intercept = 0.96, p = 0.220).

Figure B12. Forest plot of adverse effects outcomes

Note: An accessible version of the data displayed in this figure is presented in Table B9, which follows.

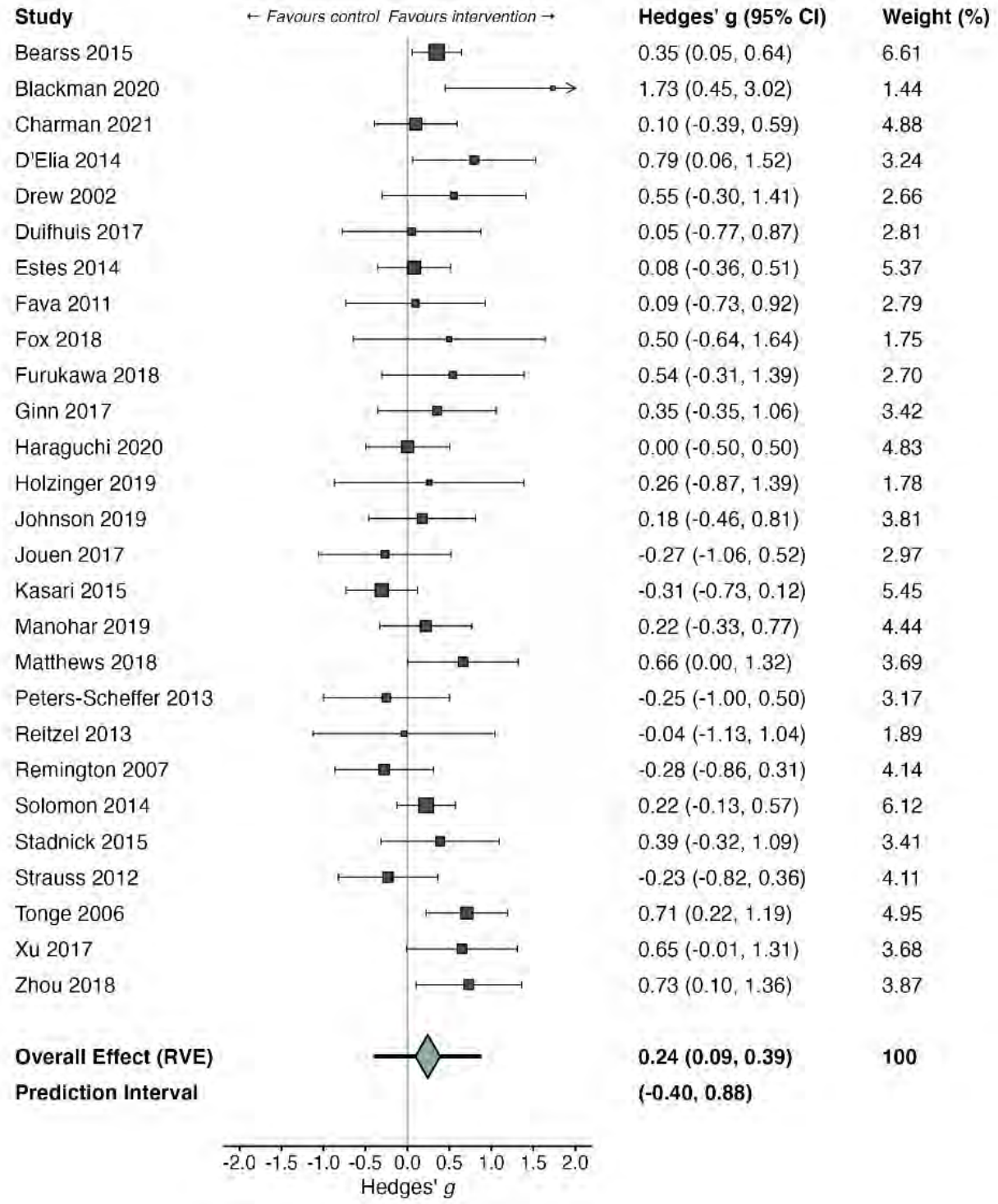
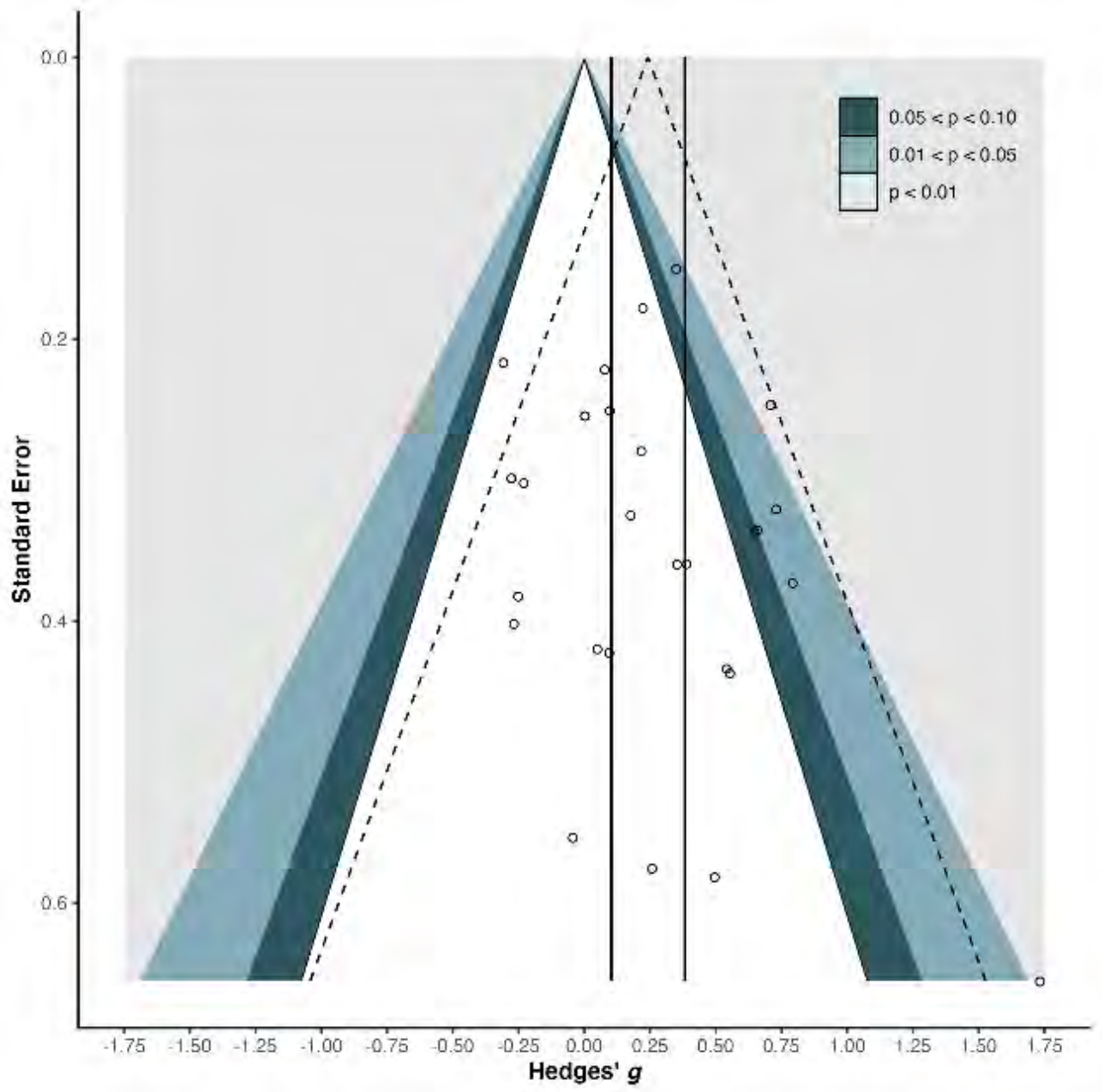


Table B9. Table version of forest plot of adverse effects outcome measures.

Note: This table presents the information displayed in Figure B12 in an accessible format. Positive Hedges' g values favour the behaviourally based intervention, negative Hedges' g values favour the comparison group.

Study	Hedges' g (95%CI)	Weight (%)
Bearss 2015	0.35 (0.05, 0.64)	6.61
Blackman 2020	1.73 (0.45, 3.02)	1.44
Charman 2021	0.10 (-0.39, 0.59)	4.88
D'Elia 2014	0.79 (0.06, 1.52)	3.24
Drew 2002	0.55 (-0.30, 1.41)	2.66
Duifhuis 2017	0.05 (-0.77, 0.87)	2.81
Estes 2014	0.08 (-0.36, 0.51)	5.37
Fava 2011	0.09 (-0.73, 0.92)	2.79
Fox 2018	0.50 (-0.64, 1.64)	1.75
Furukawa 2018	0.54 (-0.31, 1.39)	2.7
Ginn 2017	0.35 (-0.35, 1.06)	3.42
Haraguchi 2020	0.00 (-0.50, 0.50)	4.83
Holzinger 2019	0.26 (-0.87, 1.39)	1.78
Johnson 2019	0.18 (-0.46, 0.81)	3.81
Jouen 2017	-0.27 (-1.06, 0.52)	2.97
Kasari 2015	-0.31 (-0.73, 0.12)	5.45
Manohar 2019	0.22 (-0.33, 0.77)	4.44
Matthews 2018	0.66 (0.00, 1.32)	3.69
Peters-Scheffer 2013	-0.25 (-1.00, 0.50)	3.17
Reitzel 2013	-0.04 (-1.13, 1.04)	1.89
Remington 2007	-0.28 (-0.86, 0.31)	4.14
Solomon 2014	0.22 (-0.13, 0.57)	6.12
Stadnick 2015	0.39 (-0.32, 1.09)	3.41
Strauss 2012	-0.23 (-0.82, 0.36)	4.11
Tonge 2006	0.71 (0.22, 1.19)	4.95
Xu 2017	0.65 (-0.01, 1.31)	3.68
Zhou 2018	0.73 (0.10, 1.36)	3.87
Overall Effect (RVE)	**0.24 (0.09, 0.39)**	**100**
Prediction Interval	**(-0.40, 0.88)**	**NA**

Figure B13. Funnel plot of adverse effects outcomes



B5. Investigating the effect of dose

B5.1 Relationship between dose and efficacy

Table B10 provides model statistics for the linear models which investigate the relationship between dose (monthly and total clinician hours) and efficacy of behaviourally based interventions as compared to a control group. This is reported across all available outcomes, as well as within three outcome domains: autism characteristics, adaptive functioning, and cognition and language.

Table B10.1. Linear model statistics for association between dose (monthly clinician hours) and autism characteristic, adaptive functioning and cognition and language outcomes.

Note: These tables have been grouped together using a number-letter referencing system as they are related.

Dose/outcome domain	N	β	95%CI	p-value
All outcomes	34	0.001	-0.0006 to 0.0031	0.195
Autism characteristics	31	0.001	-0.0022 to 0.0034	0.666
Adaptive functioning	18	0.003	0.0004 to 0.0062	0.025
Cognition and language	21	0.002	0.0002 to 0.0037	0.029

Table B10.2. Linear model statistics for association between dose (total clinician hours) and autism characteristic, adaptive functioning and cognition and language outcomes.

Dose/outcome domain	N	β	95%CI	p-value
All outcomes	34	0.00005	0.000003 to 0.000998	0.036
Autism characteristics	31	-0.00002	-0.0001 to 0.0001	0.700
Adaptive functioning	18	0.00009	0.00002 to 0.00015	0.007
Cognition and language	21	0.00008	0.00001 to 0.00014	0.022

Relationship between dose and change from baseline to follow-up separately within the intervention group and the comparison group

Table B11 provides model statistics for the linear models which investigate the relationship between dose (monthly and total clinician hours) and change from pre- to post-intervention in the group of children who underwent behaviourally based intervention. This is reported across all available outcomes, as well as within three outcome domains: autism characteristics, adaptive functioning, and cognition and language.

Table B11.1. Linear model statistics for association between dose (monthly clinician hours) and autism characteristic, adaptive functioning and cognition and language outcomes for change from pre to post in the intervention group

Note: These tables have been grouped together using a number-letter referencing system as they are related.

Outcome domain	N	β	95%CI	p-value
All outcomes	33	0.004	0.0004 to 0.0083	0.031
Autism characteristics	29	0.003	-0.001 to 0.008	0.115
Adaptive functioning	17	0.007	0.0003 to 0.0134	0.040
Cognition and language	20	0.004	-0.0006 to 0.0092	0.085

Table B11.2. Linear model statistics for association between dose (total clinician hours) and autism characteristic, adaptive functioning and cognition and language outcomes for change from pre to post in the intervention group

Outcome domain	N	β	95%CI	p-value
All outcomes	33	0.00007	0.00003 to 0.00010	<0.001
Autism characteristics	29	0.00001	-0.00007 to 0.00009	0.840
Adaptive functioning	17	0.00005	0.00001 to 0.00010	0.017
Cognition and language	20	0.00012	0.00005 to 0.00019	0.001

All outcomes

The linear and non-linear models of total and monthly clinician-delivered hours of intervention by effect size for the change from baseline to follow-up in the behaviourally based intervention group, with 95% confidence intervals, for all outcomes are shown in **Figure B14**.

Figure B14.1. Linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in all outcomes from pre- to post-intervention in the intervention group.

Note: These figures have been grouped together using a number-letter referencing system as they are related. Hedges' g > 0 = improvement in outcomes from baseline to follow-up. Hedges' g > 0 = decrease in outcomes from baseline to follow-up.

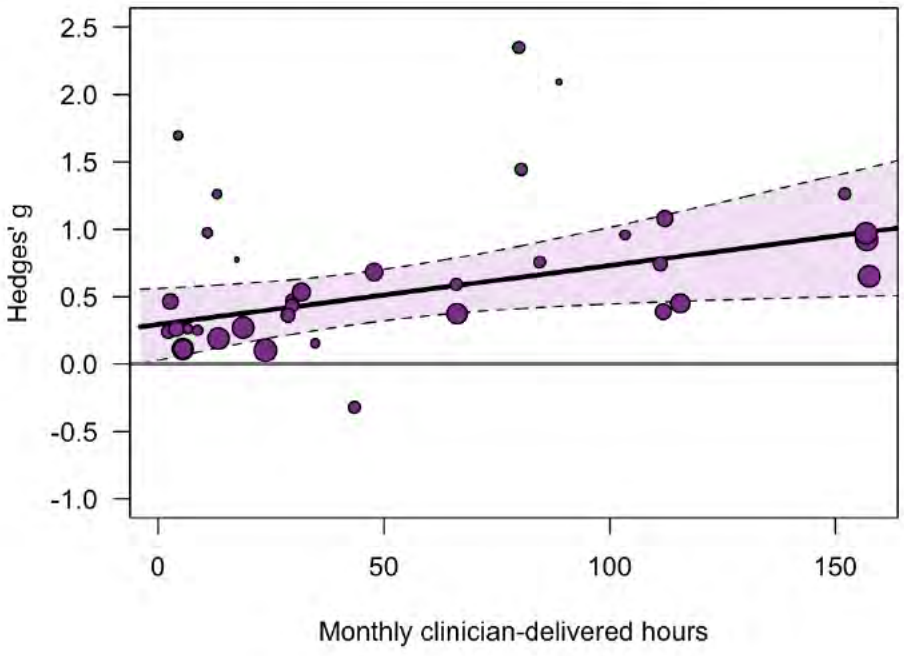


Figure B14.2. Linear model of total clinician-delivered dose by effect size (Hedges' g) for change in all outcomes from pre- to post-intervention in the intervention group.

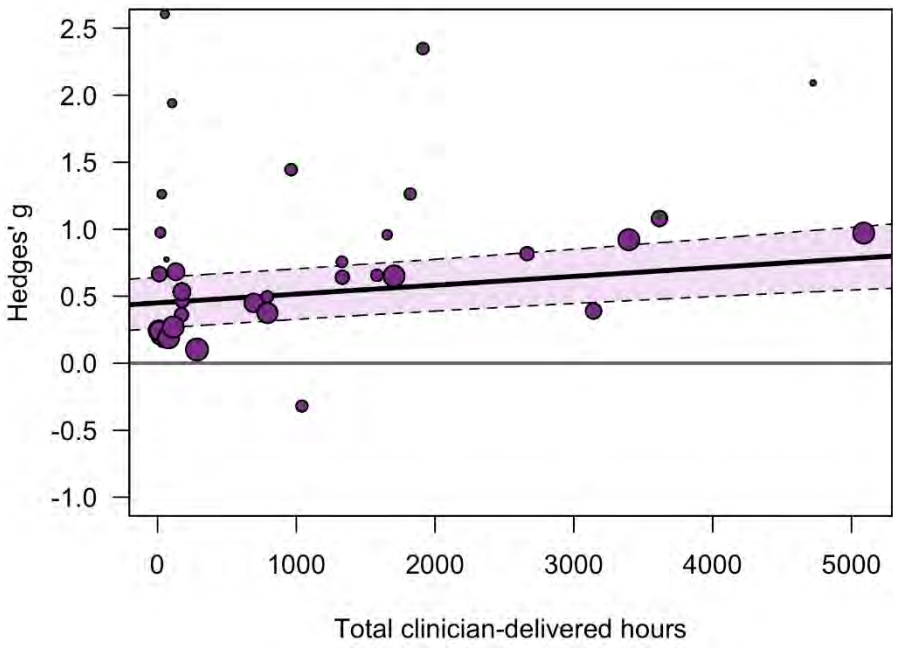


Figure B14.3. Non-linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in all outcomes from pre- to post-intervention in the intervention group.

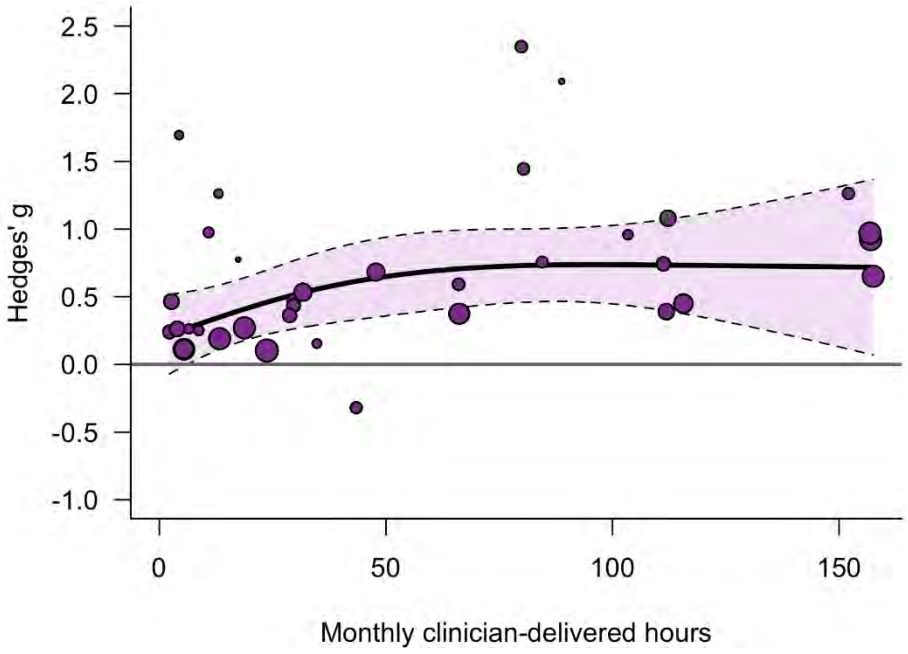
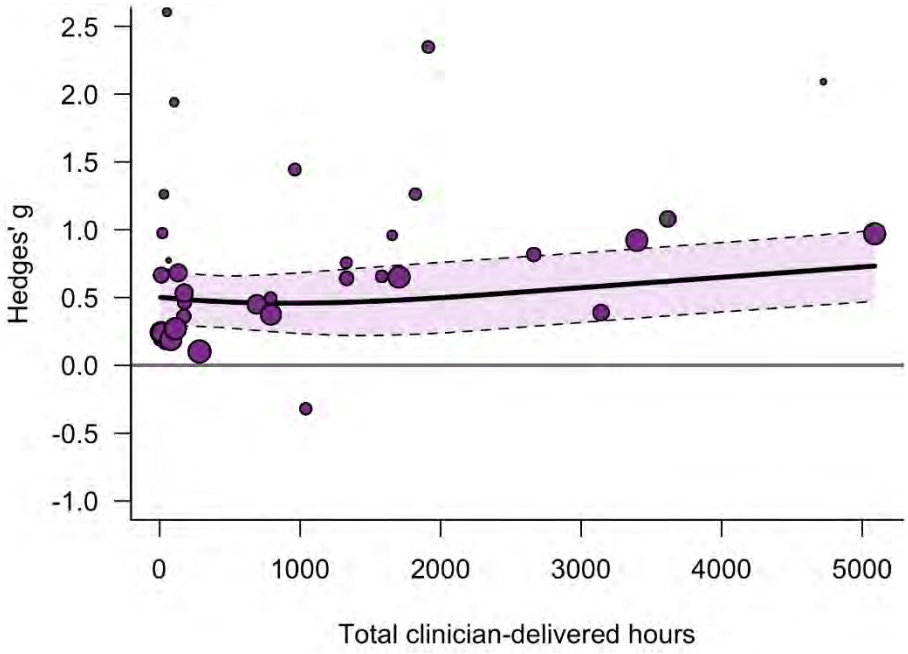


Figure B14.4. Non-linear model of total clinician-delivered dose by effect size (Hedges' g) for change in all outcomes from pre- to post-intervention in the intervention group.



Autism characteristics

The linear and non-linear models of total and monthly clinician-delivered hours of intervention by effect size for the change from baseline to follow-up in the behaviourally based intervention group, with 95% confidence intervals, for autism characteristic outcomes are shown in **Figure B15**.

Figure B15.1. Linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in autism characteristic outcomes from pre- to post-intervention in the intervention group.

Note: These figures have been grouped together using a number-letter referencing system as they are related. Hedges' g > 0 = improvement in outcomes from baseline to follow-up. Hedges' g > 0 = decrease in outcomes from baseline to follow-up.

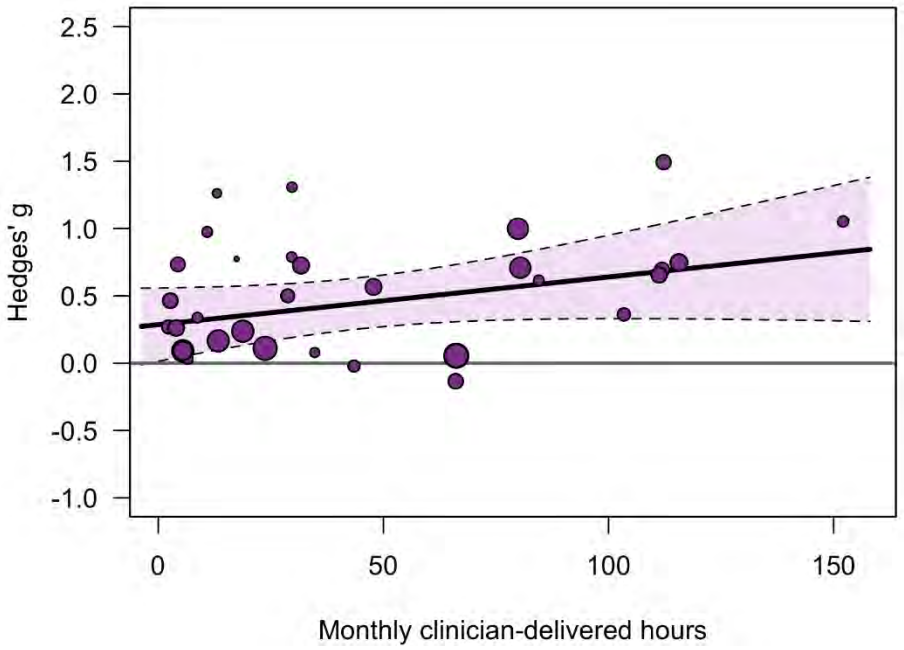


Figure B15.2. Linear model of total clinician-delivered dose by effect size (Hedges' g) for change in autism characteristic outcomes from pre- to post-intervention in the intervention group.

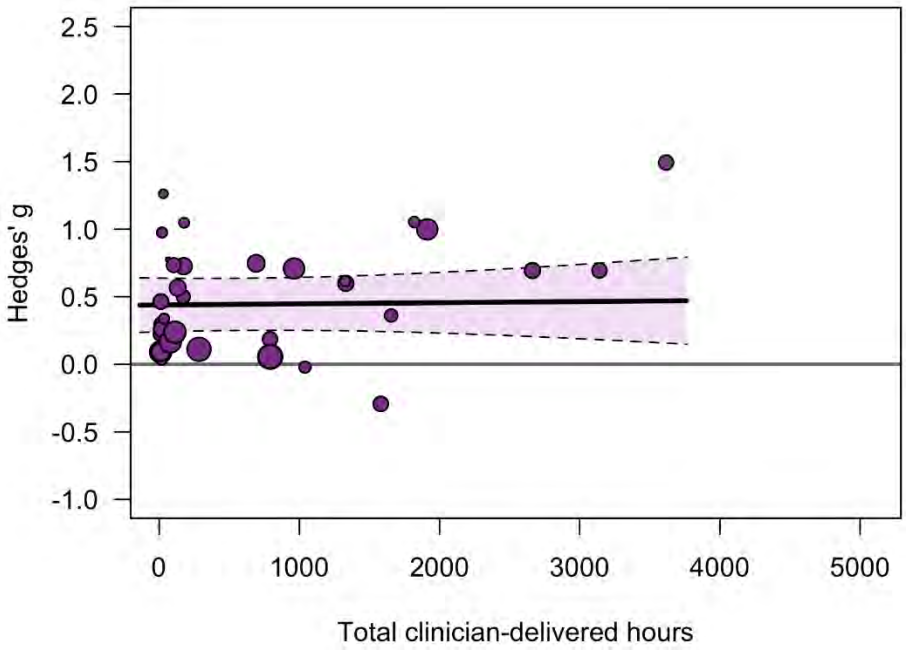


Figure B15.3. Non-linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in autism characteristic outcomes from pre- to post-intervention in the intervention group.

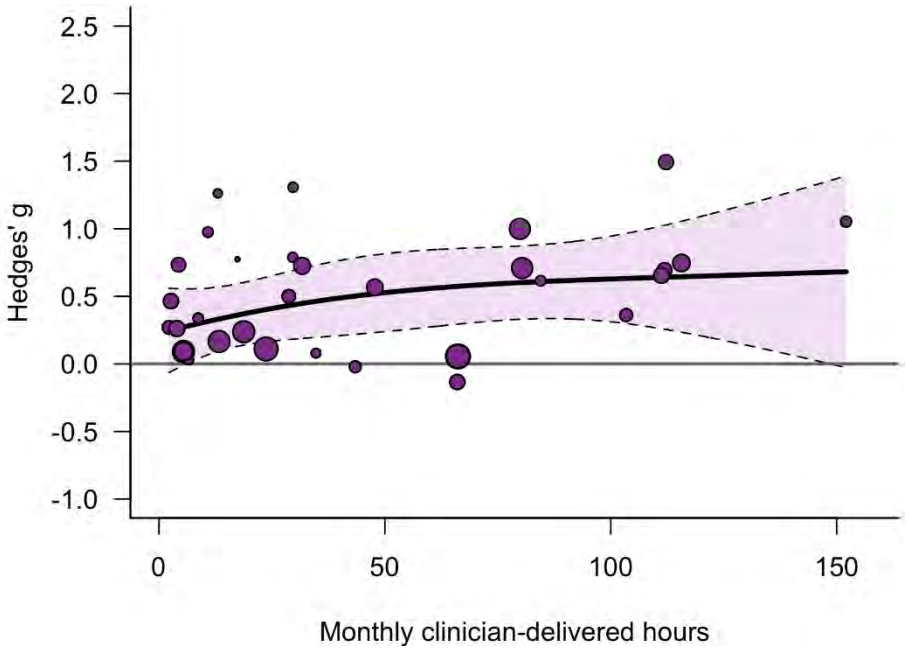
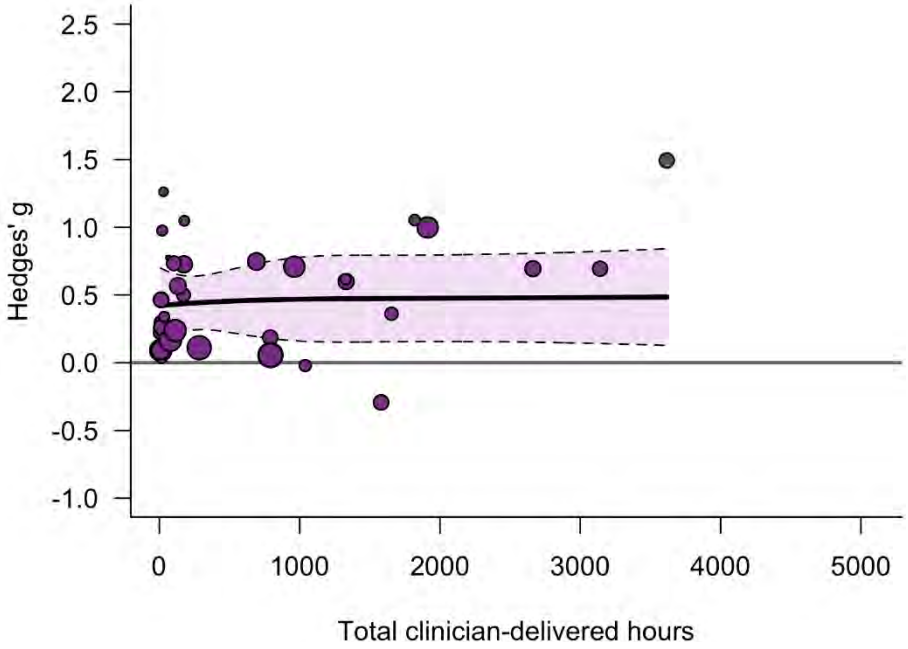


Figure B15.4. Non-linear model of total clinician-delivered dose by effect size (Hedges' g) for change in autism characteristic outcomes from pre- to post-intervention in the intervention group.



Adaptive functioning

The linear and non-linear models of total and monthly clinician-delivered hours of intervention by effect size for the change from baseline to follow-up in the behaviourally based intervention group, with 95% confidence intervals, for adaptive functioning outcomes are shown in **Figure B16**.

Figure B16.1. Linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in adaptive functioning outcomes from pre- to post-intervention in the intervention group.

Note: These figures have been grouped together using a number-letter referencing system as they are related. Hedges' g > 0 = improvement in outcomes from baseline to follow-up. Hedges' g > 0 = decrease in outcomes from baseline to follow-up.

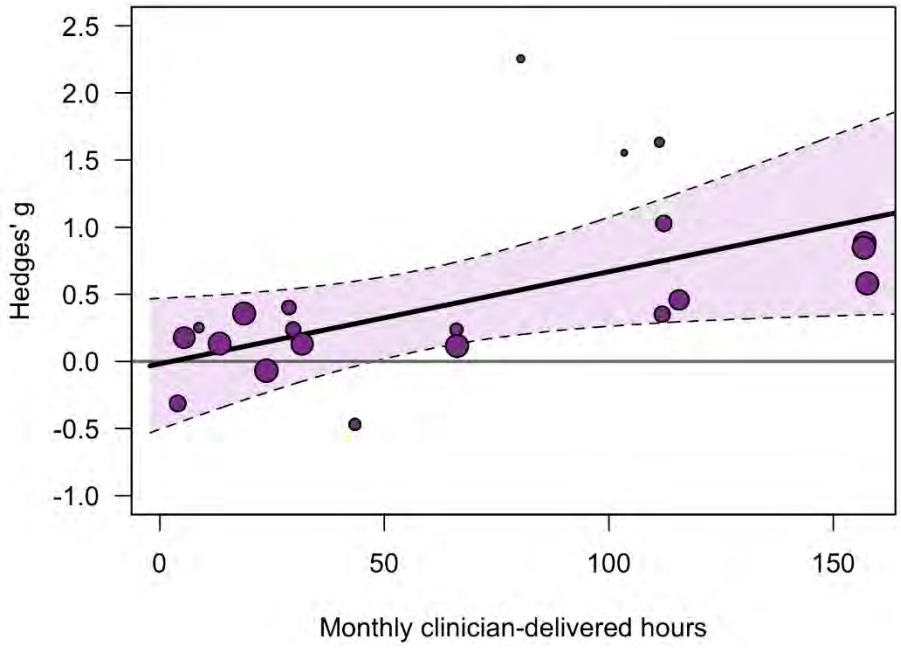


Figure B16.2. Linear model of total clinician-delivered dose by effect size (Hedges' g) for change in adaptive functioning outcomes from pre- to post-intervention in the intervention group.

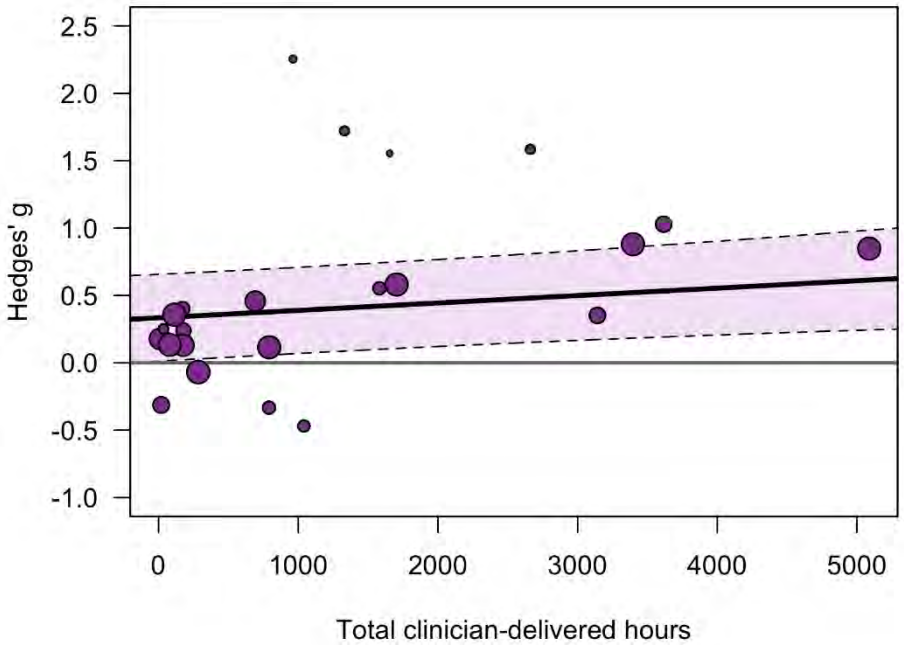


Figure B16.3. Non-linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in adaptive functioning outcomes from pre- to post-intervention in the intervention group.

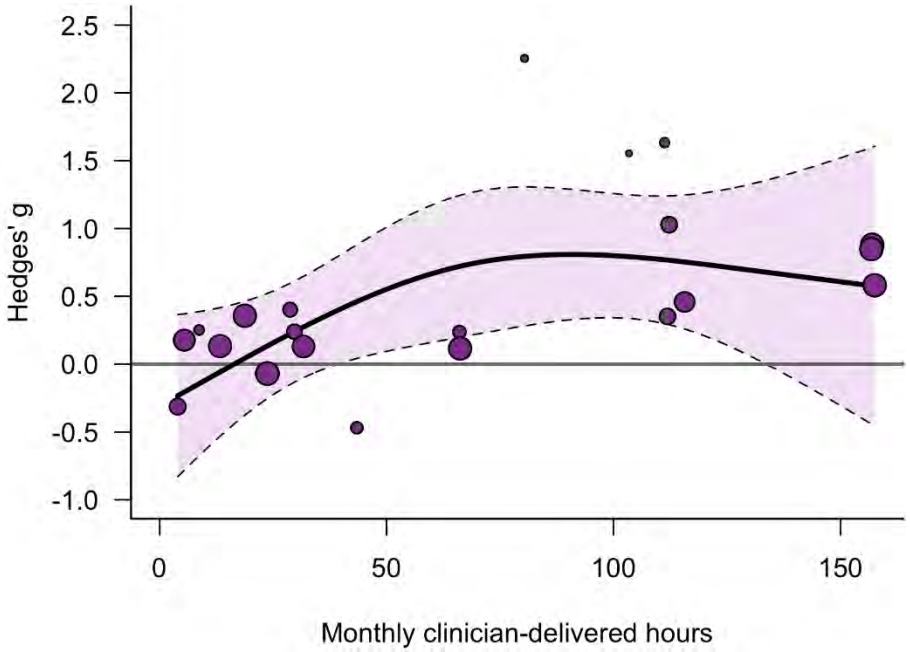
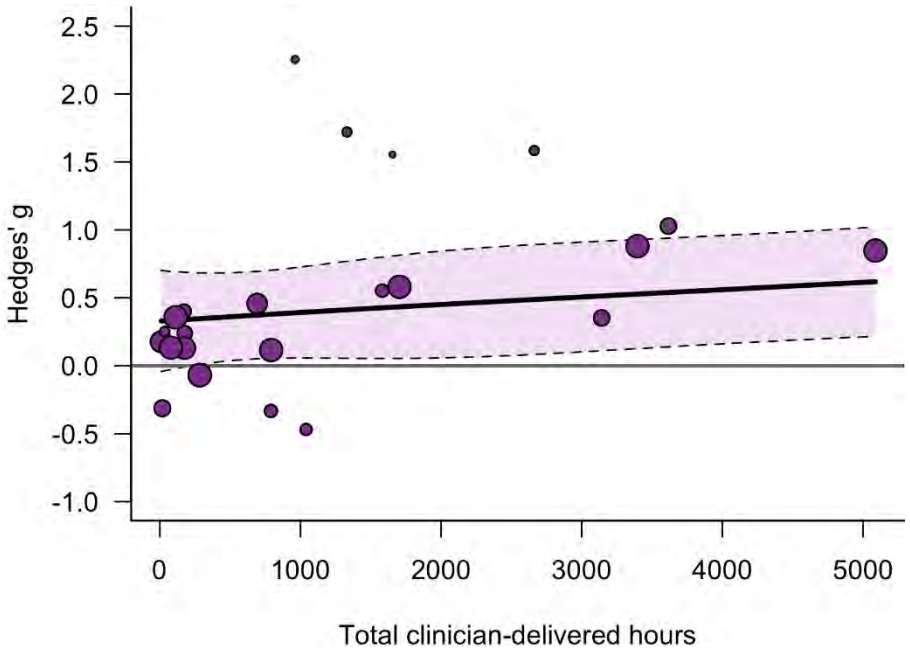


Figure B16.4. Non-linear model of total clinician-delivered dose by effect size (Hedges' g) for change in adaptive functioning outcomes from pre- to post-intervention in the intervention group.



Cognition and language

The linear and non-linear models of total and monthly clinician-delivered hours of intervention by effect size for the change from baseline to follow-up in the behaviourally based intervention group, with 95% confidence intervals, for cognition and language outcomes are shown in **Figure B17**.

Figure B17.1. Linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in cognition and language outcomes from pre- to post-intervention in the intervention group.

Note: These figures have been grouped together using a number-letter referencing system as they are related. Hedges' g > 0 = improvement in outcomes from baseline to follow-up. Hedges' g > 0 = decrease in outcomes from baseline to follow-up.

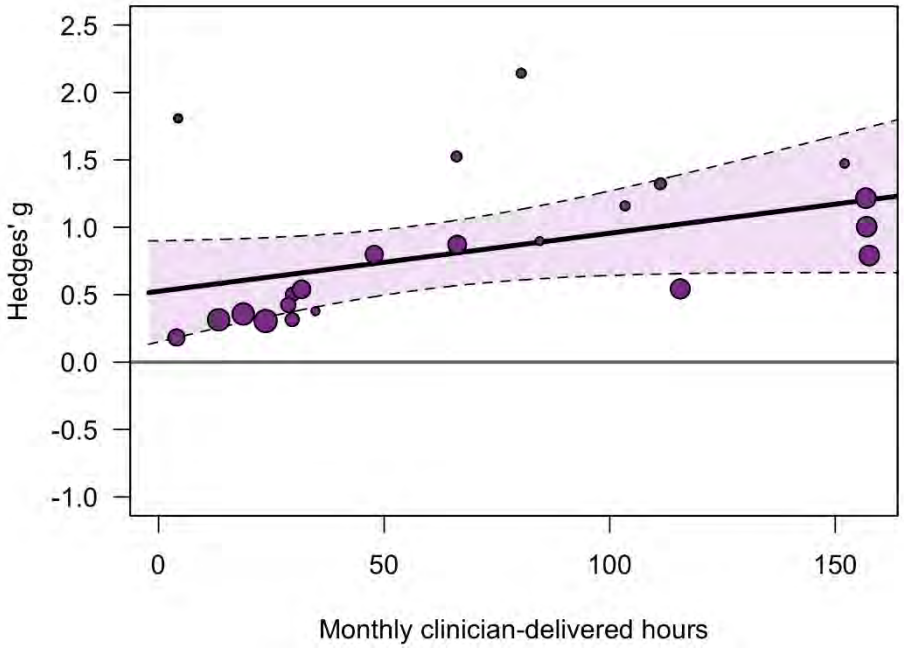


Figure B17.2. Linear model of total clinician-delivered dose by effect size (Hedges' g) for change in cognition and language outcomes from pre- to post-intervention in the intervention group.

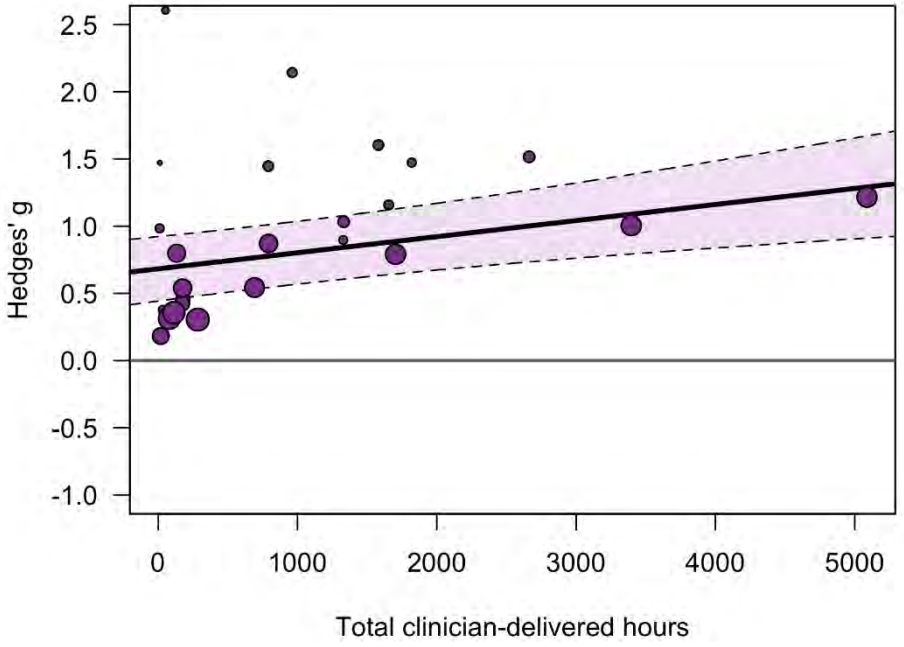


Figure B17.3. Non-linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in cognition and language outcomes from pre- to post-intervention in the intervention group.

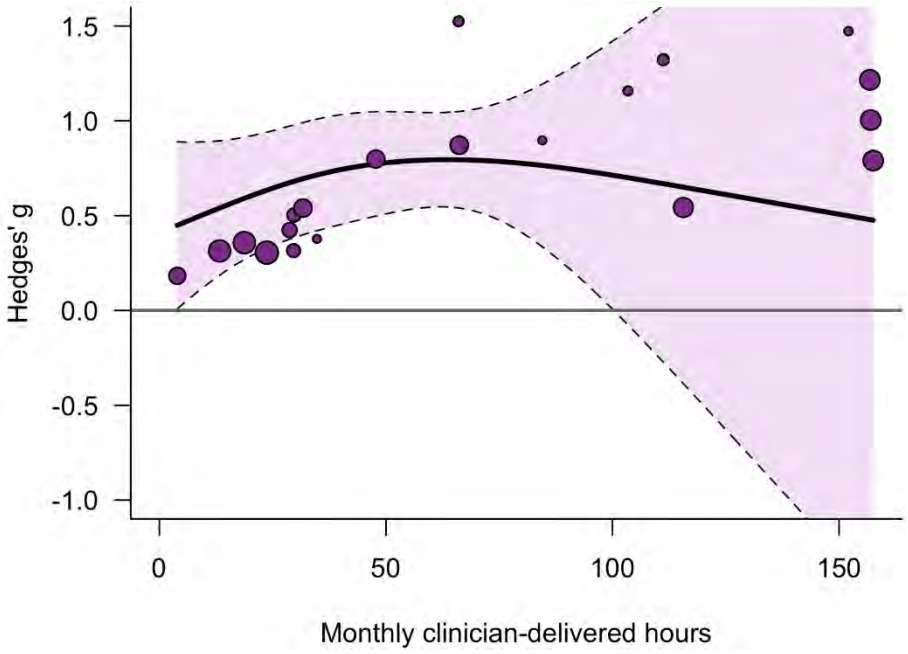
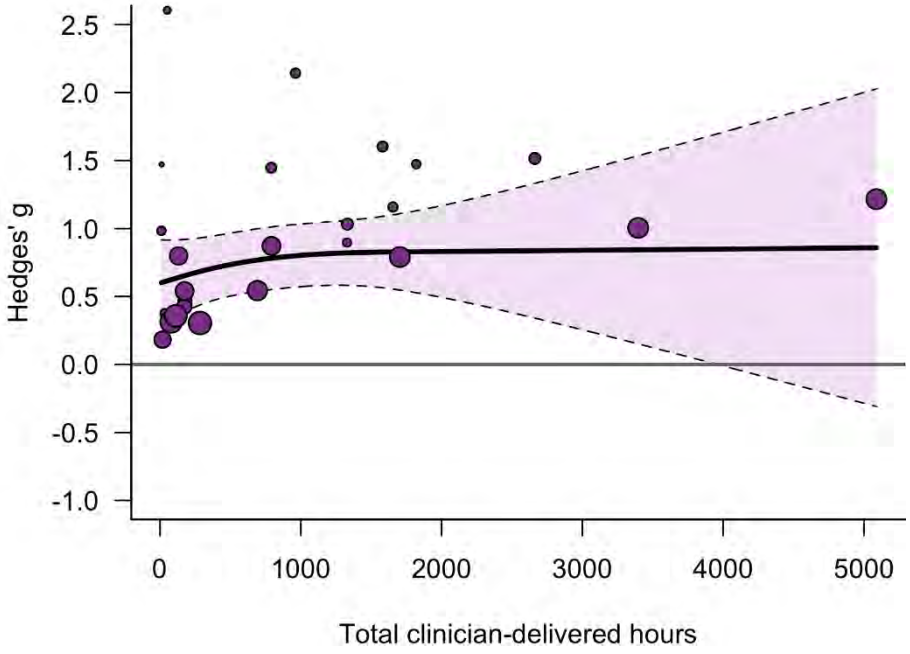


Figure B17.4. Non-linear model of total clinician-delivered dose by effect size (Hedges' g) for change in cognition and language outcomes from pre- to post-intervention in the intervention group.



Comparison group

Table B12 provides model statistics for the linear models which investigate the relationship between dose (monthly and total clinician hours) and change from baseline to follow-up in the group of children who **did not** undergo behaviourally based intervention (i.e., the comparison group). This is reported across all available outcomes, as well as within three outcome domains: autism characteristics, adaptive functioning, and cognition and language.

Table B12.1. Linear model statistics for association between dose (monthly clinician hours) and autism characteristic, adaptive functioning and cognition and language outcomes for change from baseline to follow-up in the comparison group

Note: These tables have been grouped together using a number-letter referencing system as they are related.

Dose/outcome domain	N	β	95%CI	p-value
All outcomes	17	0.0001	-0.006 to 0.006	0.965
Autism characteristics	17	0.0002	-0.006 to 0.006	0.940
Adaptive functioning	12	-0.0028	-0.021 to 0.016	0.767
Cognition and language	12	0.0025	-0.002 to 0.007	0.291

Table B12.2. Linear model statistics for association between dose (total clinician hours) and autism characteristic, adaptive functioning and cognition and language outcomes for change from baseline to follow-up in the comparison group

Dose/outcome domain	N	β	95%CI	p-value
All outcomes	19	0.0001	-0.0001 to 0.0004	0.378
Autism characteristics	18	0.0001	-0.0002 to 0.0004	0.470
Adaptive functioning	12	0.0004	-0.0004 to 0.0012	0.295
Cognition and language	13	0.0002	0.00003 to 0.00035	0.021

All outcomes

The linear and non-linear models of total and monthly clinician-delivered hours of intervention by effect size for the change from baseline to follow-up in the comparison group, with 95% confidence intervals, for all outcomes are shown in **Figure B18**.

Figure B18.1. Linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in all outcomes from pre- to post-intervention in the comparison group.

Note: These figures have been grouped together using a number-letter referencing system as they are related. Hedges' g > 0 = improvement in outcomes from baseline to follow-up. Hedges' g > 0 = decrease in outcomes from baseline to follow-up.

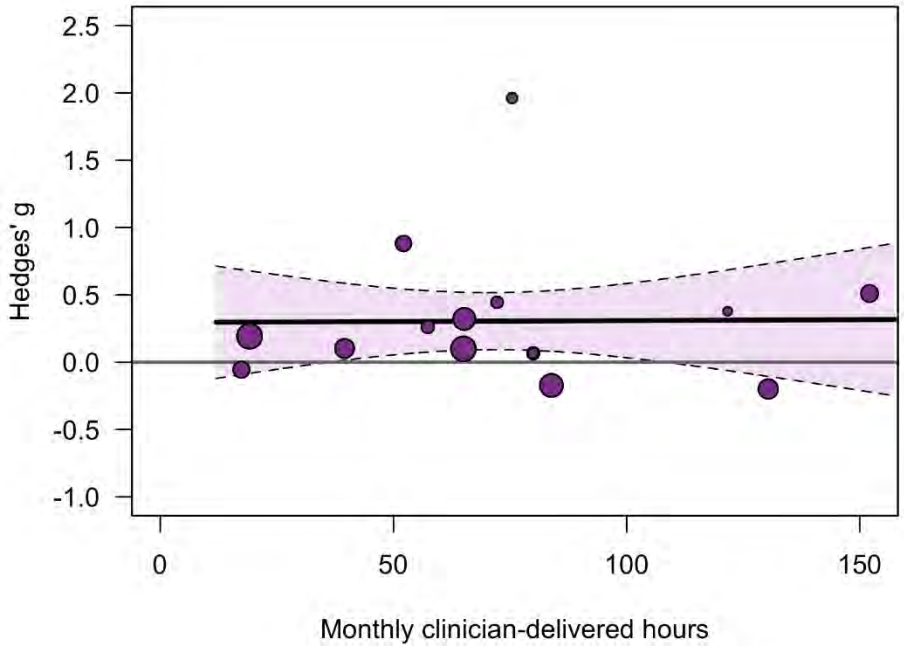


Figure B18.2. Linear model of total clinician-delivered dose by effect size (Hedges' g) for change in all outcomes from pre- to post-intervention in the comparison group.

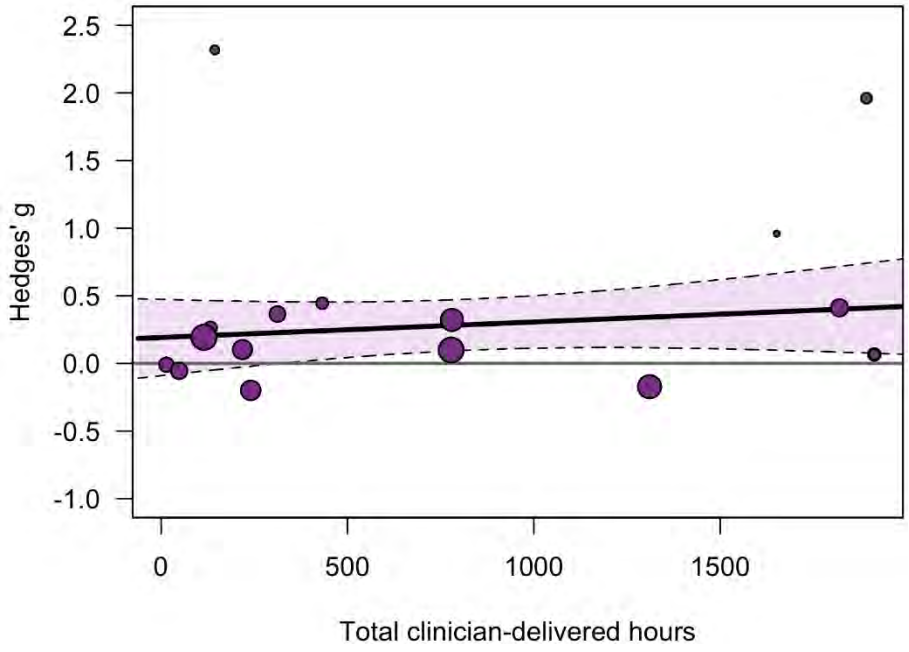


Figure B18.3. Non-linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in all outcomes from pre- to post-intervention in the comparison group.

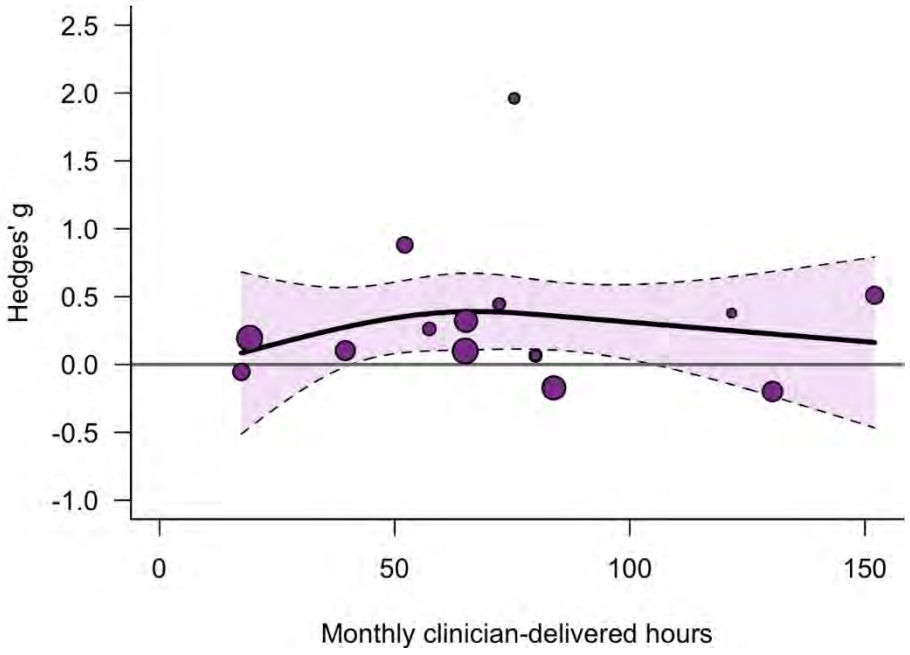
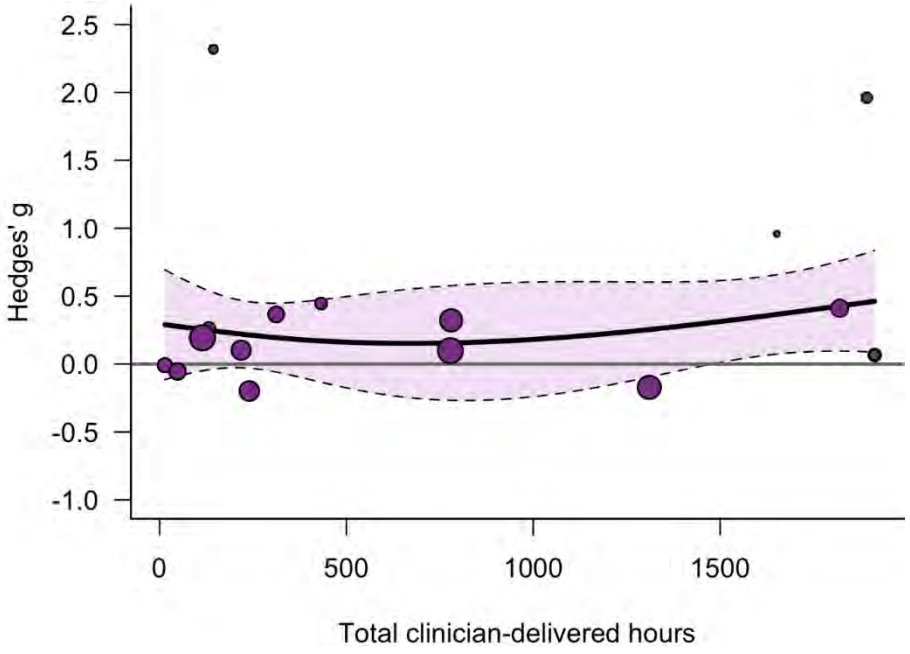


Figure B18.4. Non-linear model of total clinician-delivered dose by effect size (Hedges' g) for change in all outcomes from pre- to post-intervention in the comparison group.



Autism characteristics

The linear and non-linear models of total and monthly clinician-delivered hours of intervention by effect size for the change from baseline to follow-up in the comparison group, with 95% confidence intervals, for autism characteristic outcomes are shown in **Figure B19**.

Figure B19.1. Linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in autism characteristic outcomes from pre- to post-intervention in the comparison group.

Note: These figures have been grouped together using a number-letter referencing system as they are related. Hedges' g > 0 = improvement in outcomes from baseline to follow-up. Hedges' g > 0 = decrease in outcomes from baseline to follow-up.

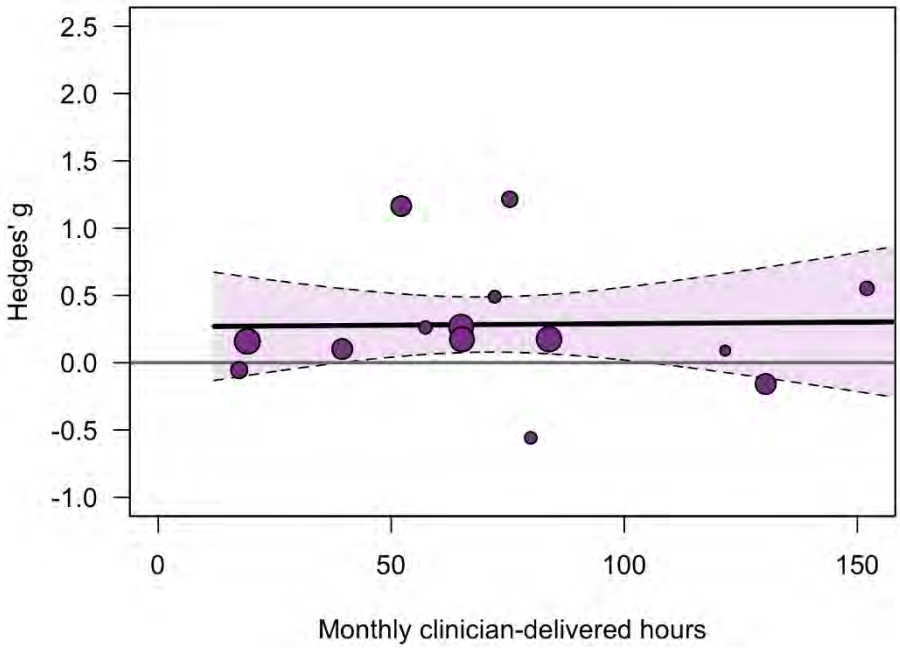


Figure B19.2. Linear model of total clinician-delivered dose by effect size (Hedges' g) for change in autism characteristic outcomes from pre- to post-intervention in the comparison group.

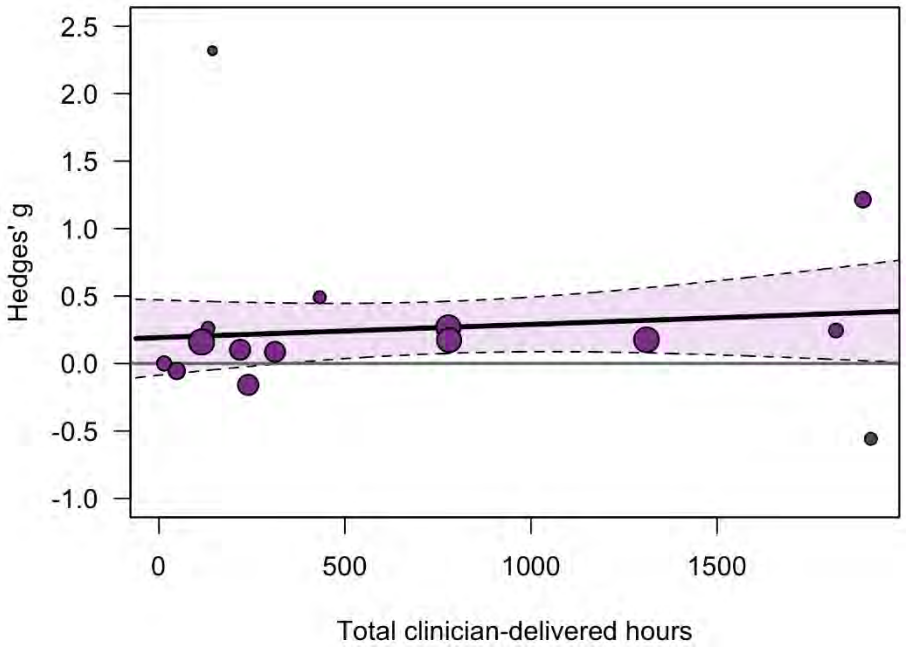


Figure B19.3. Non-linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in autism characteristic outcomes from pre- to post-intervention in the comparison group.

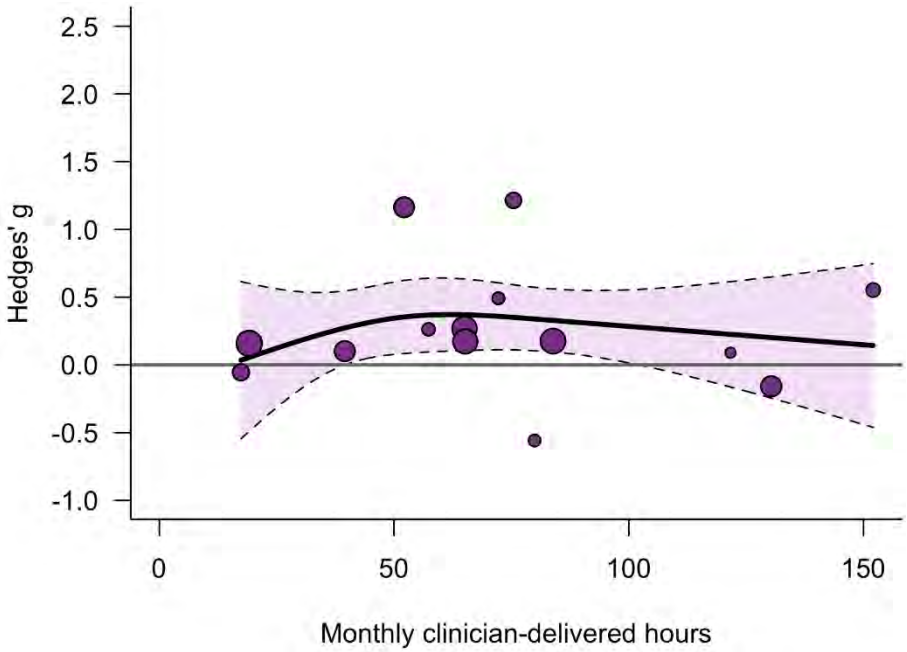
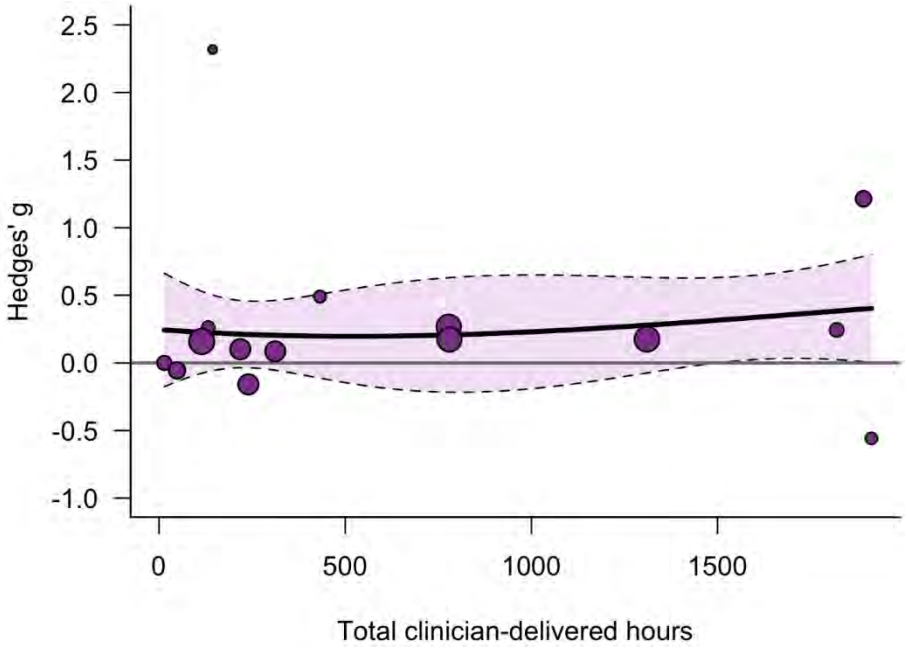


Figure B19.4. Non-linear model of total clinician-delivered dose by effect size (Hedges' g) for change in autism characteristic outcomes from pre- to post-intervention in the comparison group.



Adaptive functioning

The linear and non-linear models of total and monthly clinician-delivered hours of intervention by effect size for the change from baseline to follow-up in the comparison group, with 95% confidence intervals, for adaptive functioning outcomes are shown in **Figure B20**.

Figure B20.1. Linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in adaptive functioning outcomes from pre- to post-intervention in the comparison group.

Note: These figures have been grouped together using a number-letter referencing system as they are related. Hedges' g > 0 = improvement in outcomes from baseline to follow-up. Hedges' g > 0 = decrease in outcomes from baseline to follow-up.

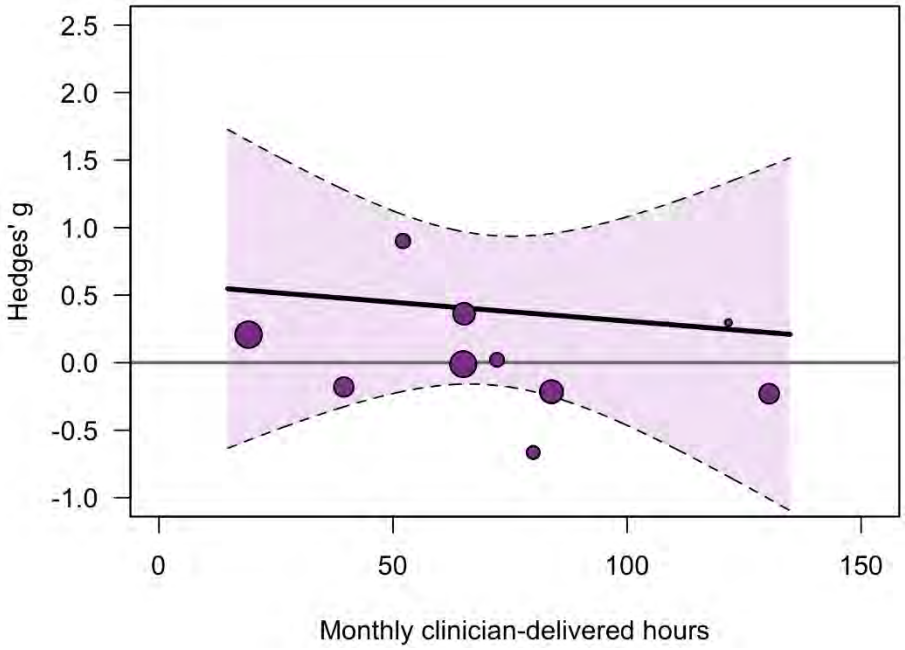


Figure B20.2. Linear model of total clinician-delivered dose by effect size (Hedges' g) for change in adaptive functioning outcomes from pre- to post-intervention in the comparison group.

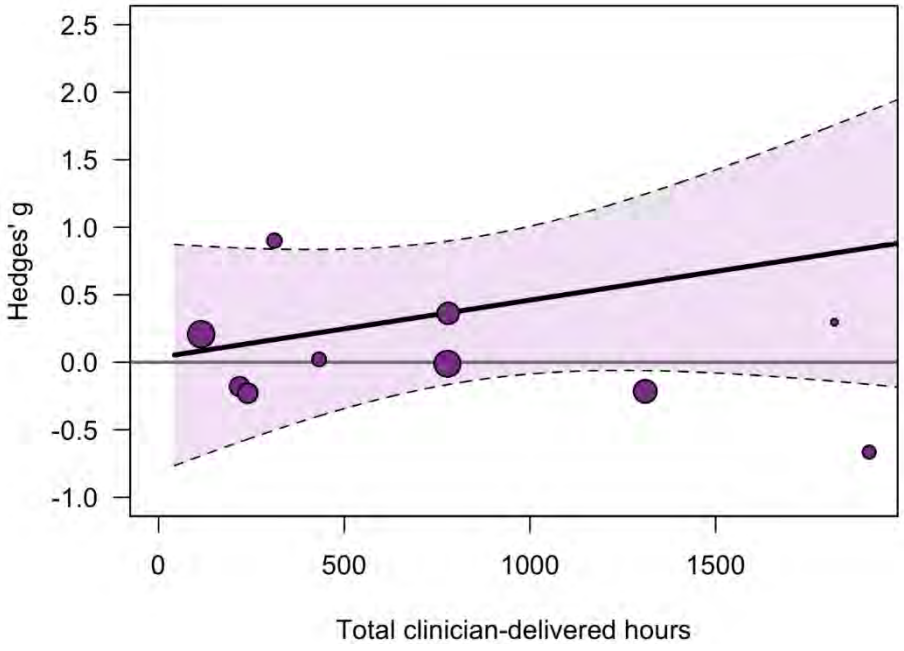


Figure B20.3. Non-linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in adaptive functioning outcomes from pre- to post-intervention in the comparison group.

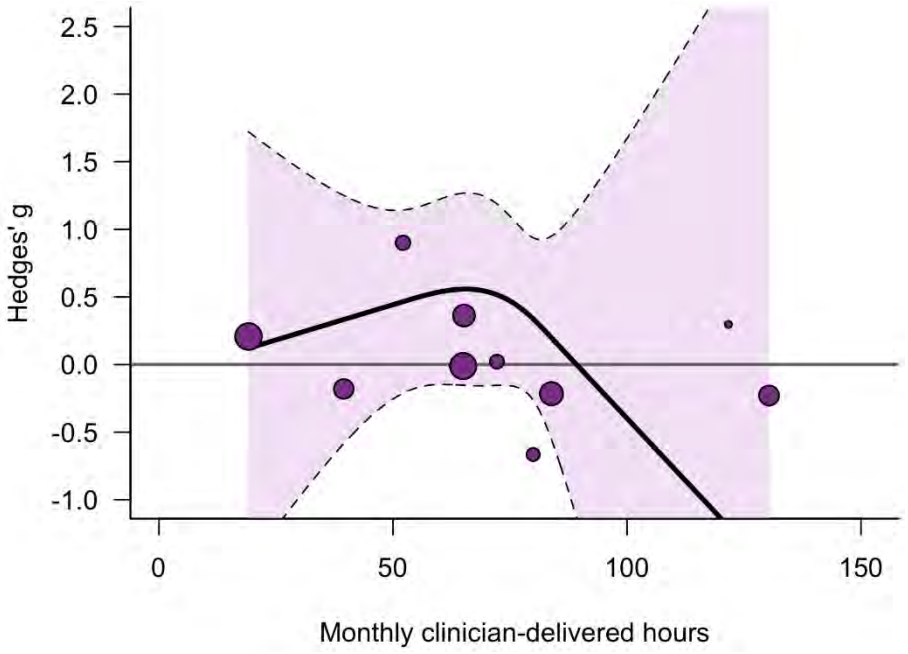
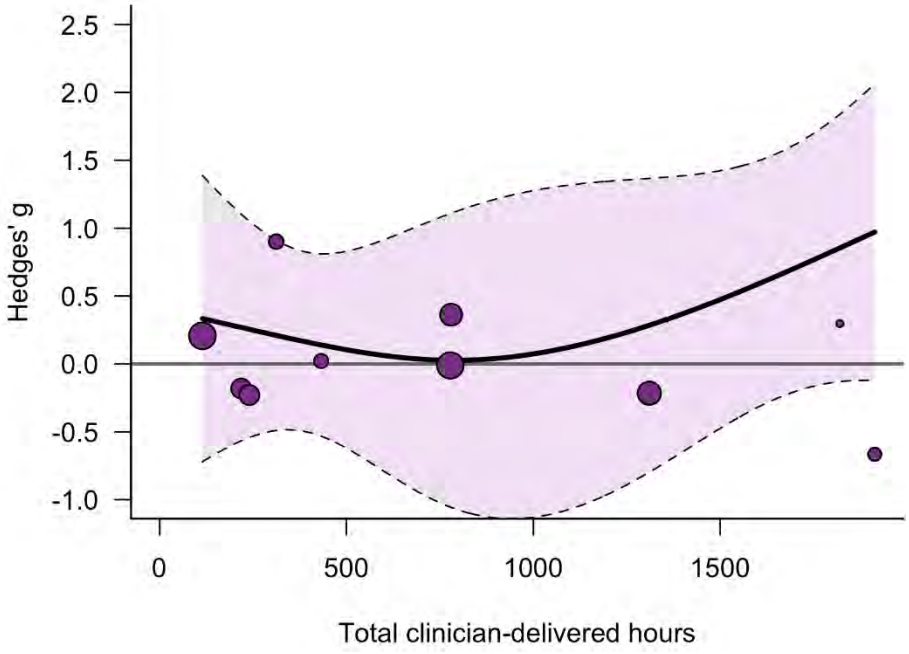


Figure B20.4. Non-linear model of total clinician-delivered dose by effect size (Hedges' g) for change in adaptive functioning outcomes from pre- to post-intervention in the comparison group.



Cognition and language

The linear and non-linear models of total and monthly clinician-delivered hours of intervention by effect size for the change from baseline to follow-up in the comparison group, with 95% confidence intervals, for cognition and language outcomes are shown in **Figure B21**.

Figure B21.1. Linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in cognition and language outcomes from pre- to post-intervention in the comparison group.

Note: These figures have been grouped together using a number-letter referencing system as they are related. Hedges' g > 0 = improvement in outcomes from baseline to follow-up. Hedges' g > 0 = decrease in outcomes from baseline to follow-up.

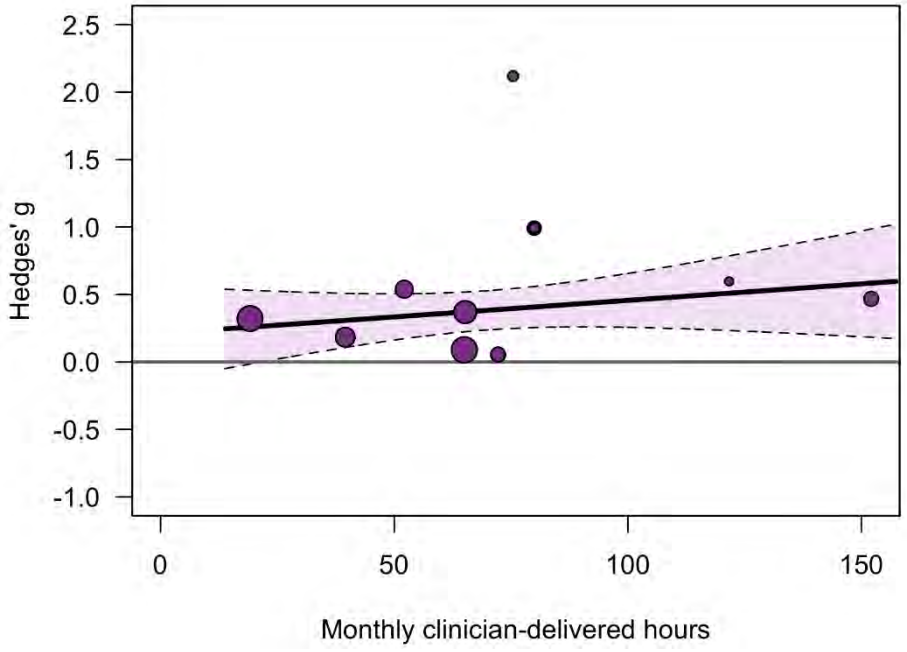


Figure B21.2. Linear model of total clinician-delivered dose by effect size (Hedges' g) for change in cognition and language outcomes from pre- to post-intervention in the comparison group.

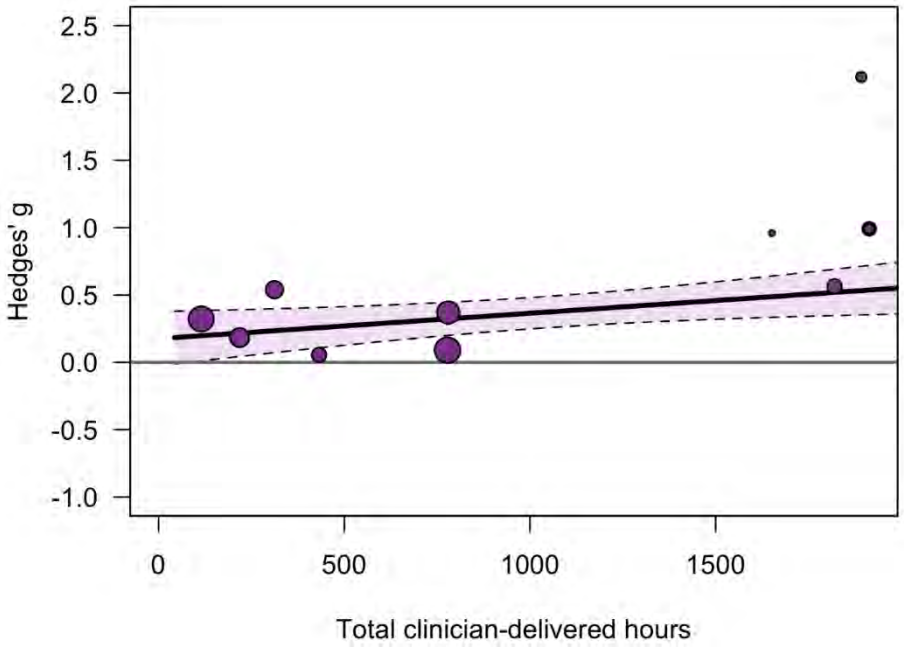


Figure B21.3. Non-linear model of monthly clinician-delivered dose by effect size (Hedges' g) for change in cognition and language outcomes from pre- to post-intervention in the comparison group.

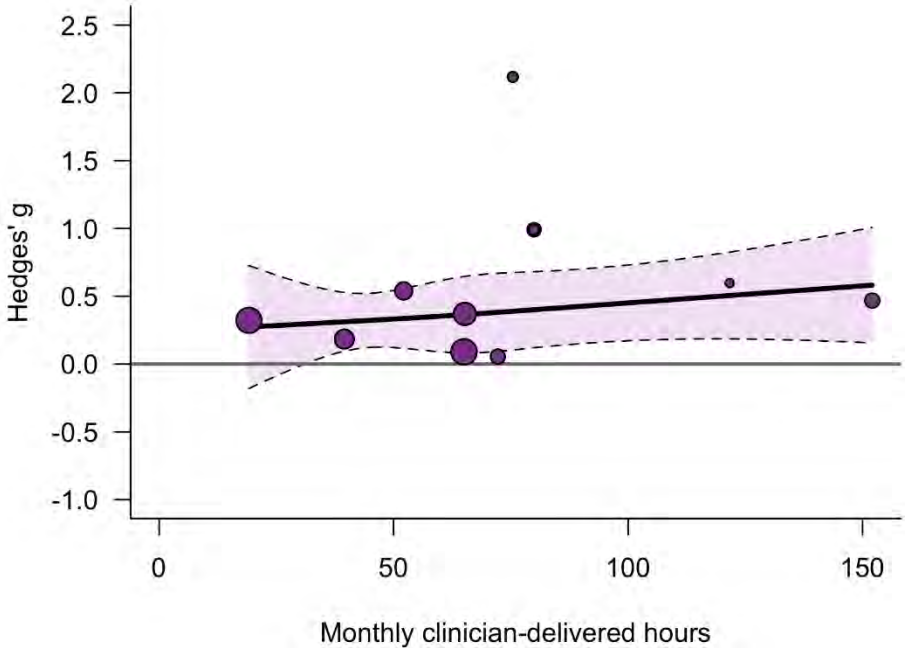
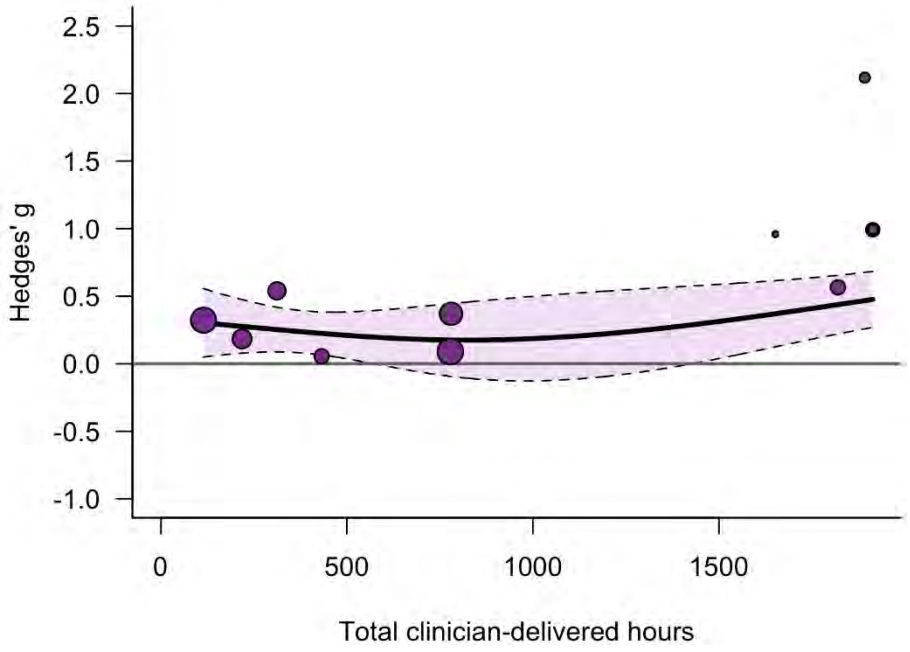


Figure B21.4. Non-linear model of total clinician-delivered dose by effect size (Hedges' g) for change in cognition and language outcomes from pre- to post-intervention in the comparison group.



B6. Investigating the effect of population, intervention, and study design factors on efficacy

Results and forest plots for each subgroup analysis are shown for each outcome domain in **Figures B22-B26**.

Figure B22. Results of subgroup analysis for autism characteristic outcome domain

Note: An accessible version of the data displayed in this figure is presented in Table B13, which follows. The *F* and the *p* statistic are from the Wald-type test. If statistically significant ($p < 0.05$), this indicates that there is a difference in efficacy of the intervention between levels of the subgroup. Tau^2 is a measure of statistical heterogeneity, which gives an estimation of the extent to which an effect estimate is inconsistent across studies.

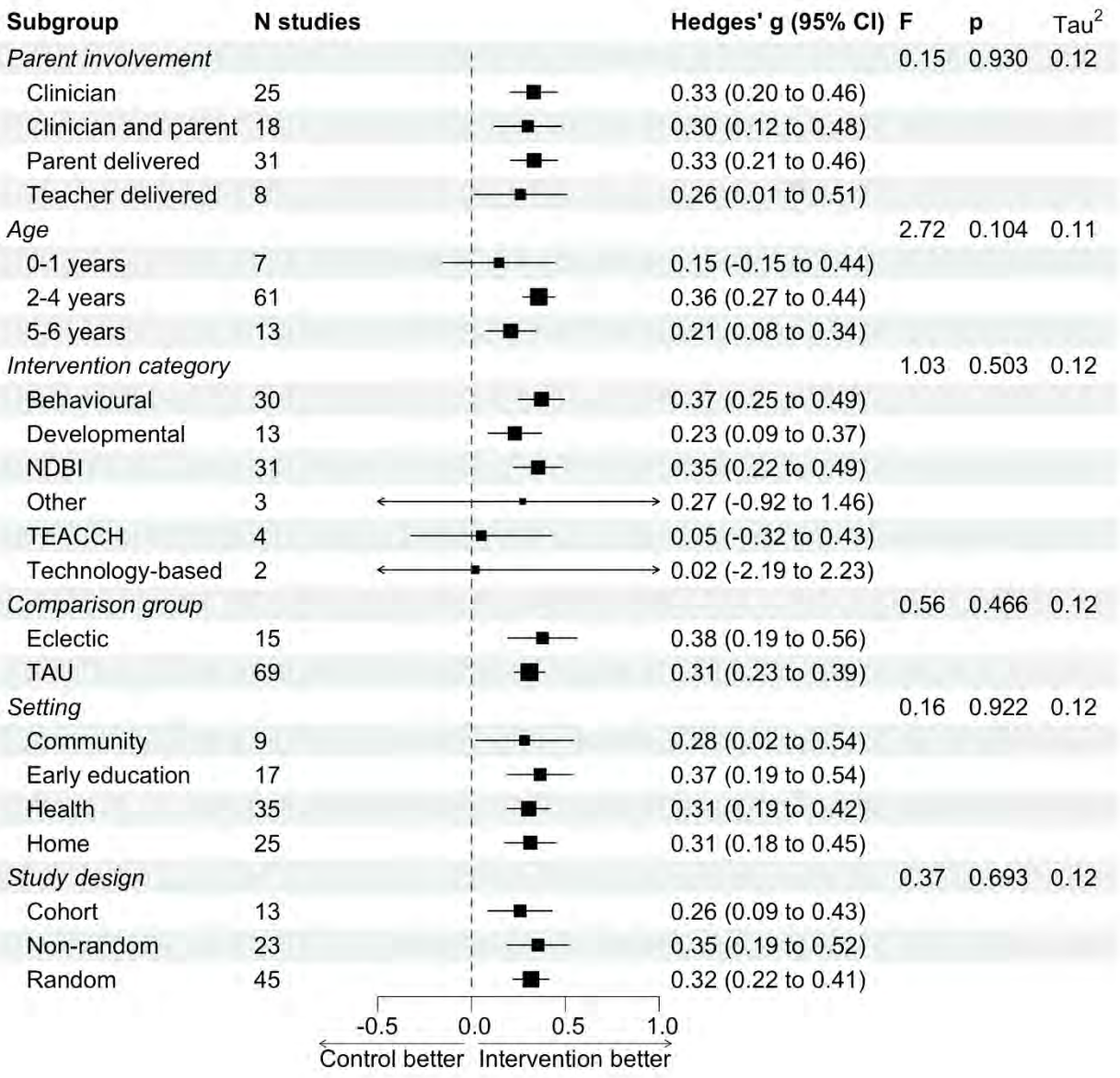


Table B13. Table version of results of subgroup analysis for autism characteristic outcome domain

Note: This table presents the information displayed in Figure B22 in an accessible format. The F and the p statistic are from the Wald-type test. If statistically significant ($p < 0.05$), this indicates that there is a difference in efficacy of the intervention between levels of the subgroup. Tau^2 is a measure of statistical heterogeneity, which gives an estimation of the extent to which an effect estimate is inconsistent across studies. NA = not applicable.

Subgroup	N studies	Hedges' g (95% CI)	F	p	Tau^2
Subgroup: Parent involvement	NA	NA	0.15	0.93	0.12
Clinician	25	0.33 (0.20 to 0.46)	NA	NA	NA
Clinician and parent	18	0.30 (0.12 to 0.48)	NA	NA	NA
Parent delivered	31	0.33 (0.21 to 0.46)	NA	NA	NA
Teacher delivered	8	0.26 (0.01 to 0.51)	NA	NA	NA
Subgroup: Age	NA	NA	2.72	0.104	0.11
0-1 years	7	0.15 (-0.15 to 0.44)	NA	NA	NA
2-4 years	61	0.36 (0.27 to 0.44)	NA	NA	NA
5-6 years	13	0.21 (0.08 to 0.34)	NA	NA	NA
Subgroup: Intervention category	NA	NA	1.03	0.503	0.12
Behavioural	30	0.37 (0.25 to 0.49)	NA	NA	NA
Developmental	13	0.23 (0.09 to 0.37)	NA	NA	NA
NDBI	31	0.35 (0.22 to 0.49)	NA	NA	NA
Other	3	0.27 (-0.92 to 1.46)	NA	NA	NA
TEACCH	4	0.05 (-0.32 to 0.43)	NA	NA	NA
Technology-based	2	0.02 (-2.19 to 2.23)	NA	NA	NA
Subgroup: Comparison group	NA	NA	0.05	0.82	0.12
Eclectic	15	0.38 (0.16 to 0.50)	NA	NA	NA
TAU	69	0.31 (0.23 to 0.39)	NA	NA	NA
Subgroup: Setting	NA	NA	0.16	0.922	0.12
Community	9	0.28 (0.02 to 0.54)	NA	NA	NA
Early education	17	0.37 (0.19 to 0.54)	NA	NA	NA
Health	35	0.31 (0.19 to 0.42)	NA	NA	NA
Home	25	0.31 (0.18 to 0.45)	NA	NA	NA
Subgroup: Study design	NA	NA	0.37	0.693	0.12
Cohort	13	0.26 (0.09 to 0.43)	NA	NA	NA
Non-random	23	0.35 (0.19 to 0.52)	NA	NA	NA
Random	45	0.32 (0.22 to 0.41)	NA	NA	NA

Figure B23. Results of subgroup analysis for adaptive functioning outcome domain

Note: An accessible version of the data displayed in this figure is presented in Table B14, which follows. The *F* and the *p* statistic are from the Wald-type test. If statistically significant ($p < 0.05$), this indicates that there is a difference in efficacy of the intervention between levels of the subgroup. Tau^2 is a measure of statistical heterogeneity, which gives an estimation of the extent to which an effect estimate is inconsistent across studies.

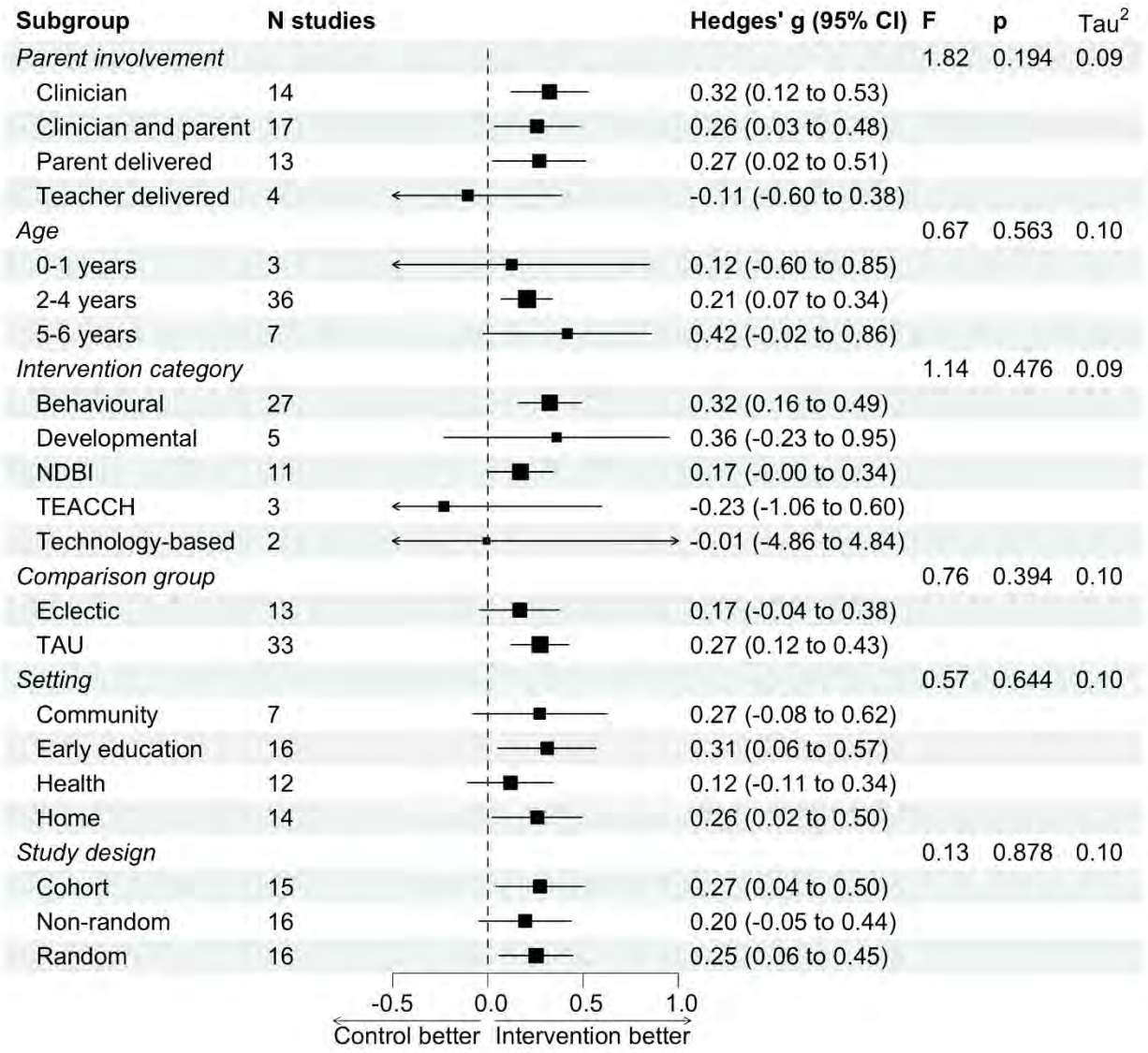


Table B14. Table version of results of subgroup analysis for adaptive functioning outcome domain

Note: This table presents the information displayed in Figure B23 in an accessible format. The F and the p statistic are from the Wald-type test. If statistically significant ($p < 0.05$), this indicates that there is a difference in efficacy of the intervention between levels of the subgroup. Tau^2 is a measure of statistical heterogeneity, which gives an estimation of the extent to which an effect estimate is inconsistent across studies. NA = not applicable.

Subgroup	N studies	Hedges' g (95% CI)	F	p	Tau^2
Subgroup: Parent involvement	NA	NA	1.82	0.194	0.09
Clinician	14	0.32 (0.12 to 0.53)	NA	NA	NA
Clinician and parent	17	0.26 (0.03 to 0.48)	NA	NA	NA
Parent delivered	13	0.27 (0.02 to 0.51)	NA	NA	NA
Teacher delivered	4	-0.11 (-0.60 to 0.38)	NA	NA	NA
Subgroup: Age	NA	NA	0.67	0.563	0.1
0-1 years	3	0.12 (-0.60 to 0.85)	NA	NA	NA
2-4 years	36	0.21 (0.07 to 0.34)	NA	NA	NA
5-6 years	7	0.42 (-0.02 to 0.86)	NA	NA	NA
Subgroup: Intervention category	NA	NA	1.14	0.476	0.09
Behavioural	27	0.32 (0.16 to 0.49)	NA	NA	NA
Developmental	5	0.36 (-0.23 to 0.95)	NA	NA	NA
NDBI	11	0.17 (-0.00 to 0.34)	NA	NA	NA
TEACCH	3	-0.23 (-1.06 to 0.60)	NA	NA	NA
Technology-based	2	-0.01 (-4.86 to 4.84)	NA	NA	NA
Subgroup: Comparison group	NA	NA	0.75	0.396	0.1
Eclectic	14	0.17 (-0.01 to 0.36)	NA	NA	NA
TAU	33	0.27 (0.12 to 0.42)	NA	NA	NA
Subgroup: Setting	NA	NA	0.57	0.644	0.1
Community	7	0.27 (-0.08 to 0.62)	NA	NA	NA
Early education	16	0.31 (0.06 to 0.57)	NA	NA	NA
Health	12	0.12 (-0.11 to 0.34)	NA	NA	NA
Home	14	0.26 (0.02 to 0.50)	NA	NA	NA
Subgroup: Study design	NA	NA	0.13	0.878	0.1
Cohort	15	0.27 (0.04 to 0.50)	NA	NA	NA
Non-random	16	0.20 (-0.05 to 0.44)	NA	NA	NA
Random	16	0.25 (0.06 to 0.45)	NA	NA	NA

Figure B24. Results of subgroup analysis for cognition and language outcome domain

Note: An accessible version of the data displayed in this figure is presented in Table B15, which follows. The *F* and the *p* statistic are from the Wald-type test. If statistically significant ($p < 0.05$), this indicates that there is a difference in efficacy of the intervention between levels of the subgroup. Tau^2 is a measure of statistical heterogeneity, which gives an estimation of the extent to which an effect estimate is inconsistent across studies.

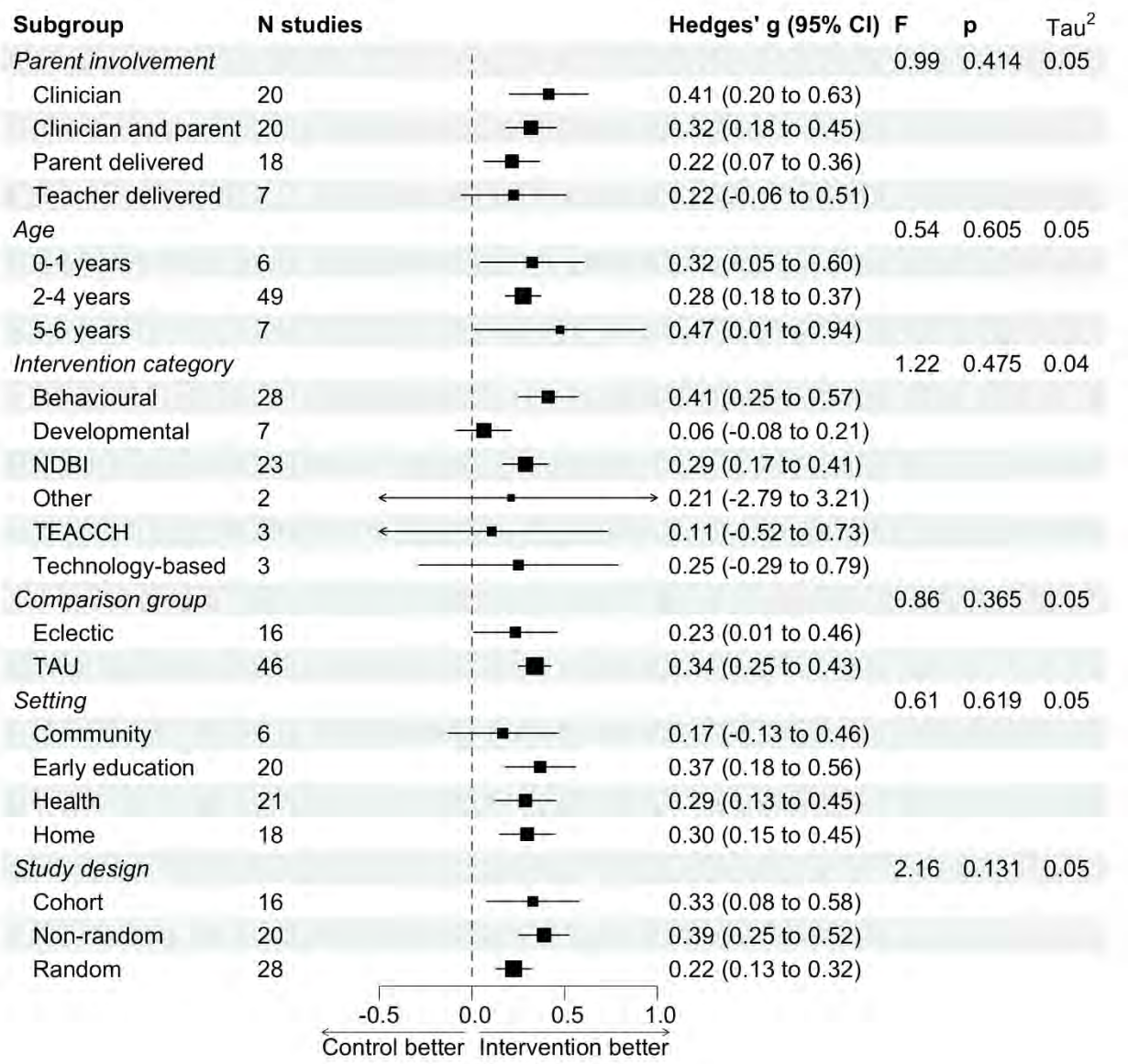


Table B15. Table version of results of subgroup analysis for cognition and language outcome domain

Note: This table presents the information displayed in Figure B24 in an accessible format. The F and the p statistic are from the Wald-type test. If statistically significant ($p < 0.05$), this indicates that there is a difference in efficacy of the intervention between levels of the subgroup. Tau^2 is a measure of statistical heterogeneity, which gives an estimation of the extent to which an effect estimate is inconsistent across studies. NA = not applicable.

Subgroup	N studies	Hedges' g (95% CI)	F	p	Tau^2
Subgroup: Parent involvement	NA	NA	0.99	0.414	0.05
Clinician	20	0.41 (0.20 to 0.63)	NA	NA	NA
Clinician and parent	20	0.32 (0.18 to 0.45)	NA	NA	NA
Parent delivered	18	0.22 (0.07 to 0.36)	NA	NA	NA
Teacher delivered	7	0.22 (-0.06 to 0.51)	NA	NA	NA
Subgroup: Age	NA	NA	0.54	0.605	0.05
0-1 years	6	0.32 (0.05 to 0.60)	NA	NA	NA
2-4 years	49	0.28 (0.18 to 0.37)	NA	NA	NA
5-6 years	7	0.47 (0.01 to 0.94)	NA	NA	NA
Subgroup: Intervention category	NA	NA	1.22	0.475	0.04
Behavioural	28	0.41 (0.25 to 0.57)	NA	NA	NA
Developmental	7	0.06 (-0.08 to 0.21)	NA	NA	NA
NDBI	23	0.29 (0.17 to 0.41)	NA	NA	NA
Other	2	0.21 (-2.79 to 3.21)	NA	NA	NA
TEACCH	3	0.11 (-0.52 to 0.73)	NA	NA	NA
Technology-based	3	0.25 (-0.29 to 0.79)	NA	NA	NA
Subgroup: Comparison group	NA	NA	0.62	0.439	0.05
Eclectic	16	0.23 (0.01 to 0.46)	NA	NA	NA
TAU	48	0.34 (0.25 to 0.43)	NA	NA	NA
Subgroup: Setting	NA	NA	0.61	0.619	0.05
Community	6	0.17 (-0.13 to 0.46)	NA	NA	NA
Early education	20	0.37 (0.18 to 0.56)	NA	NA	NA
Health	21	0.29 (0.13 to 0.45)	NA	NA	NA
Home	18	0.30 (0.15 to 0.45)	NA	NA	NA
Subgroup: Study design	NA	NA	2.16	0.131	0.05
Cohort	16	0.33 (0.08 to 0.58)	NA	NA	NA
Non-random	20	0.39 (0.25 to 0.52)	NA	NA	NA
Random	28	0.22 (0.13 to 0.32)	NA	NA	NA

Figure B25. Results of subgroup analysis for family outcomes domain

Note: An accessible version of the data displayed in this figure is presented in Table B16, which follows. The *F* and the *p* statistic are from the Wald-type test. If statistically significant ($p < 0.05$), this indicates that there is a difference in efficacy of the intervention between levels of the subgroup. Tau^2 is a measure of statistical heterogeneity, which gives an estimation of the extent to which an effect estimate is inconsistent across studies.

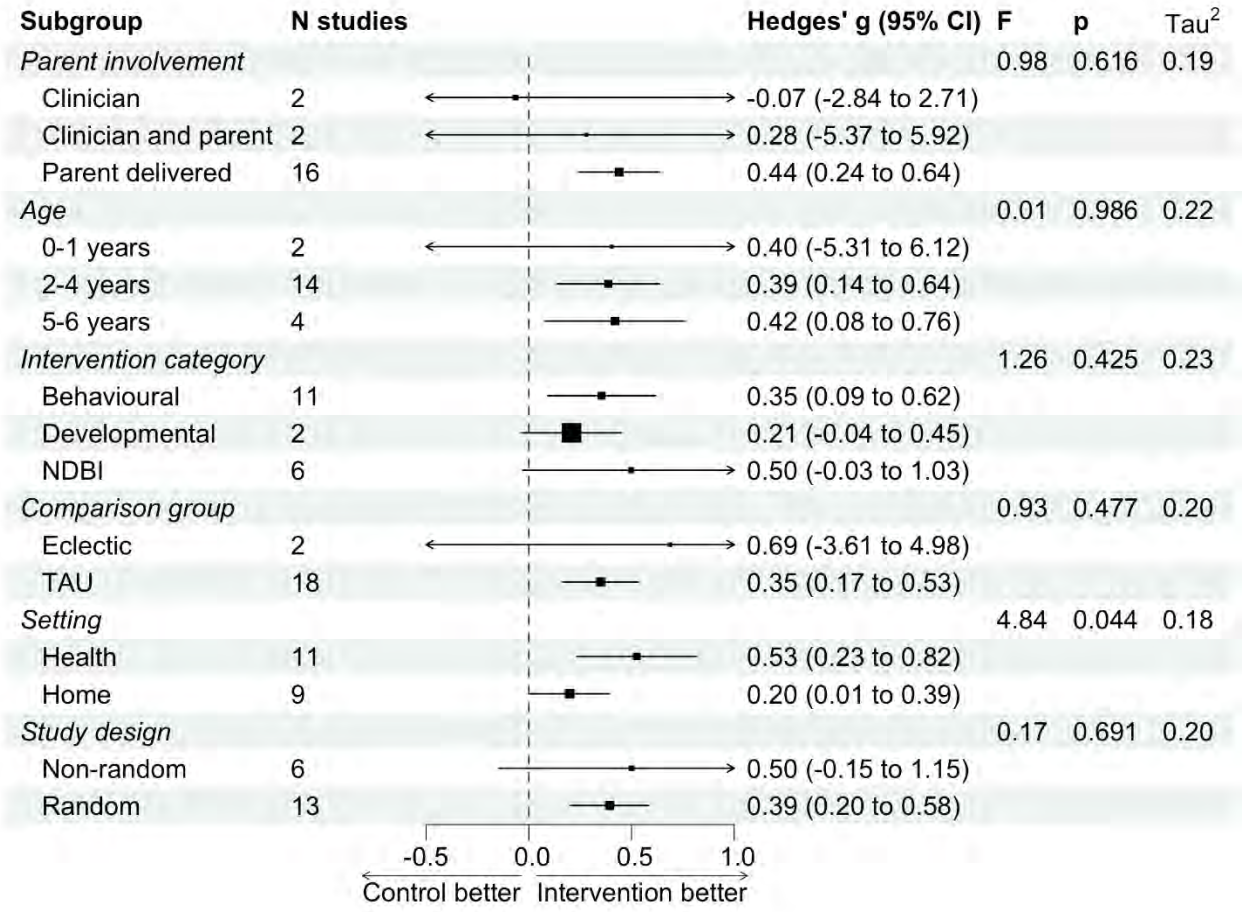


Table B16. Table version of results of subgroup analysis for family outcome domain

Note: This table presents the information displayed in Figure B25 in an accessible format. The F and the p statistic are from the Wald-type test. If statistically significant ($p < 0.05$), this indicates that there is a difference in efficacy of the intervention between levels of the subgroup. Tau^2 is a measure of statistical heterogeneity, which gives an estimation of the extent to which an effect estimate is inconsistent across studies. NA = not applicable.

Subgroup	N studies	Hedges' g (95% CI)	F	p	Tau^2
Subgroup: Parent involvement	NA	NA	0.98	0.616	0.19
Clinician	2	-0.07 (-2.84 to 2.71)	NA	NA	NA
Clinician and parent	2	0.28 (-5.37 to 5.92)	NA	NA	NA
Parent delivered	16	0.44 (0.24 to 0.64)	NA	NA	NA
Subgroup: Age	NA	NA	0.01	0.986	0.22
0-1 years	2	0.40 (-5.31 to 6.12)	NA	NA	NA
2-4 years	14	0.39 (0.14 to 0.64)	NA	NA	NA
5-6 years	4	0.42 (0.08 to 0.76)	NA	NA	NA
Subgroup: Intervention category	NA	NA	1.26	0.425	0.23
Behavioural	11	0.35 (0.09 to 0.62)	NA	NA	NA
Developmental	2	0.21 (-0.04 to 0.45)	NA	NA	NA
NDBI	6	0.50 (-0.03 to 1.03)	NA	NA	NA
Subgroup: Comparison group	NA	NA	0.93	0.477	0.2
Eclectic	2	0.69 (-3.61 to 4.98)	NA	NA	NA
TAU	18	0.35 (0.17 to 0.53)	NA	NA	NA
Subgroup: Setting	NA	NA	4.84	0.044	0.18
Health	11	0.53 (0.23 to 0.82)	NA	NA	NA
Home	9	0.20 (0.01 to 0.39)	NA	NA	NA
Subgroup: Study design	NA	NA	0.17	0.691	0.2
Non-random	6	0.50 (-0.15 to 1.15)	NA	NA	NA
Random	13	0.39 (0.20 to 0.58)	NA	NA	NA

Figure B26. Results of subgroup analysis for adverse effects outcome domain

Note: An accessible version of the data displayed in this figure is presented in Table B17, which follows. The *F* and the *p* statistic are from the Wald-type test. If statistically significant ($p < 0.05$), this indicates that there is a difference in efficacy of the intervention between levels of the subgroup. Tau^2 is a measure of statistical heterogeneity, which gives an estimation of the extent to which an effect estimate is inconsistent across studies.

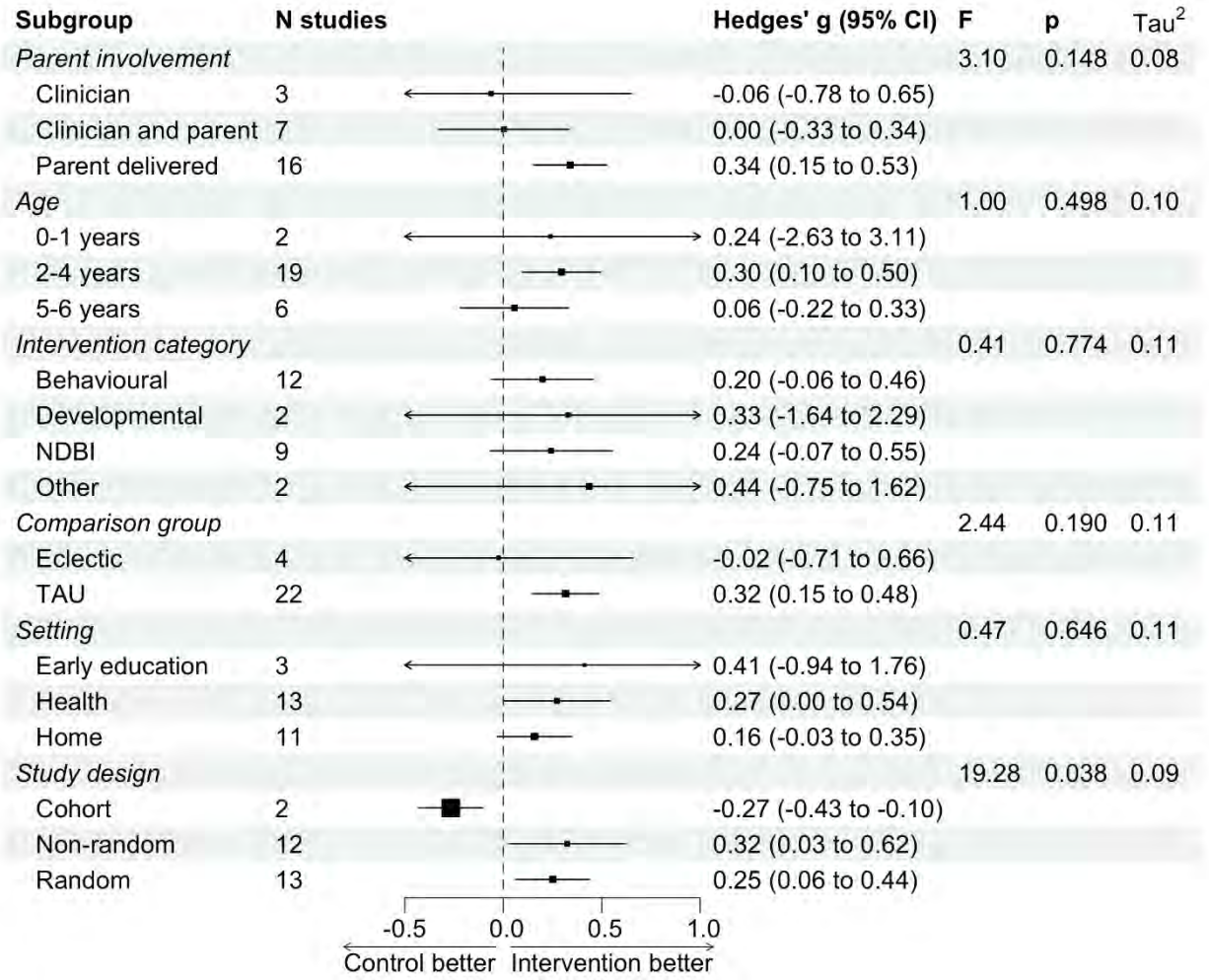


Table B17. Table version of results of subgroup analysis for adverse effects outcome domain

Note: This table presents the information displayed in Figure B26 in an accessible format. The F and the p statistic are from the Wald-type test. If statistically significant ($p < 0.05$), this indicates that there is a difference in efficacy of the intervention between levels of the subgroup. Tau^2 is a measure of statistical heterogeneity, which gives an estimation of the extent to which an effect estimate is inconsistent across studies. NA = not applicable.

Subgroup	N studies	Hedges' g (95% CI)	F	p	Tau^2
Subgroup: Parent involvement	NA	NA	3.1	0.148	0.08
Clinician	3	-0.06 (-0.78 to 0.65)	NA	NA	NA
Clinician and parent	7	0.00 (-0.33 to 0.34)	NA	NA	NA
Parent delivered	16	0.34 (0.15 to 0.53)	NA	NA	NA
Subgroup: Age	NA	NA	1	0.498	0.1
0-1 years	2	0.24 (-2.63 to 3.11)	NA	NA	NA
2-4 years	19	0.30 (0.10 to 0.50)	NA	NA	NA
5-6 years	6	0.06 (-0.22 to 0.33)	NA	NA	NA
Subgroup: Intervention category	NA	NA	0.41	0.774	0.11
Behavioural	12	0.20 (-0.06 to 0.46)	NA	NA	NA
Developmental	2	0.33 (-1.64 to 2.29)	NA	NA	NA
NDBI	9	0.24 (-0.07 to 0.55)	NA	NA	NA
Other	2	0.44 (-0.75 to 1.62)	NA	NA	NA
Subgroup: Comparison group	NA	NA	2.15	0.215	0.09
Eclectic	4	-0.00 (-0.65 to 0.65)	NA	NA	NA
TAU	23	0.30 (0.14 to 0.46)	NA	NA	NA
Subgroup: Setting	NA	NA	0.47	0.646	0.11
Early education	3	0.41 (-0.94 to 1.76)	NA	NA	NA
Health	13	0.27 (0.00 to 0.54)	NA	NA	NA
Home	11	0.16 (-0.03 to 0.35)	NA	NA	NA
Subgroup: Study design	NA	NA	19.28	0.038	0.09
Cohort	2	-0.27 (-0.43 to -0.10)	NA	NA	NA
Non-random	12	0.32 (0.03 to 0.62)	NA	NA	NA
Random	13	0.25 (0.06 to 0.44)	NA	NA	NA

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Learner Workbook

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Planning Essentials Program – early childhood partner

Early childhood R&N

Module 3 – making and communicating good decisions

Learner Workbook

s22(1)(a)(ii) - irrelevant material

5. Activity – Finn

5.1. Section 34.1(b) Facilitate social and economic participation

Please read the scenario below, and consider the answer to the question below. Please post your answer into the poll in MS Teams.

Scenario

Finn is 6 years old with a primary disability of autism spectrum disorder. Finn lives with his parents and sisters. Finn has difficulty with emotional regulation and is socially excluded as he hits other children and has trouble communicating. Finn's parents want to increase his ability to interact with others at school, as he is currently only attending two days per week with an Education Department approved reduction in attendance. Finn attends an applied behaviour analysis (ABA) therapy clinic on the other three days per week. The intention of Finn attending ABA therapy three days per week is to increase his capacity to participate further in his school environment.
The following recommendations have been made by the therapist for the next 12 months:

- 60 hours of behaviour consultation and training
- 1000 hours of behaviour therapy (ABA).

1. Would this funding facilitate Finn's social participation?

Answer

Facilitator Guide

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Planning Essentials Program – early childhood partner

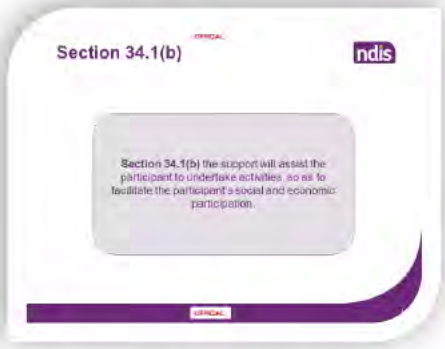
Early childhood R&N

Module 3 – making and communicating good decisions

Facilitator Guide

s22(1)(a)(ii) - irrelevant material

3.5. Section 34.1(b)



Facilitator Guide

State:

Decision-makers must be satisfied the funded support will assist the child to undertake activities which support or increase the child's social and economic participation.

This means the supports funded in the NDIS plan are expected to build the capacity of the child, and support the child's family or carers to assist the child to meet their NDIS goals.

A requested support will not always facilitate social and economic participation. Some supports can be a barrier to social participation. An example of this might be when a child has a significantly high number of therapy hours which limit their ability to attend early childhood education settings with children their age.

We are going to look through Activity – Finn in your learner workbook then complete the poll question in the MS Teams channel ['section 34'].

Pause and review context: do not read aloud. The evidence in this scenario indicates that applied behaviour analysis therapy supports are requested to replace school attendance and additionally facilitate completion of school tasks.

Schooling is compulsory in all states and territories for 6 year old children, and until the minimum school leaving age, parents are required to ensure their child is enrolled at, and regularly attend school, or be registered for home schooling.

The education sector remains responsible for the support of children with a developmental delay and/or disability whilst attending school including those with high needs, subject to reasonable adjustment (section 34.1 (f) of the NDIS Act).

Answers / discussion:

- Would this funding facilitate Finn's social participation? **No.**

State: The answer is no in this instance. This support will not facilitate Finn's social participation, as the support will direct him away from school and social interactions in his natural environments. As early childhood partners, you might instead give consideration to funded supports which assist Finn with skill development in a range of life domain areas in natural settings.

This can be achieved through early intervention capacity building supports and consideration for a positive behaviour support plan with education and training for Finn's parents and teachers to facilitate engagement and inclusion within the home, community and school. This will address Finn's behaviour support needs and build Finn's capacity without the requirement to remove him from an environment that provides the opportunity for social interaction with a range of peers.

Facilitator Guide

Consideration should also be made for how Finn's school are supporting and addressing his inclusion and engagement through an Individual Education Plan.

s22(1)(a)(ii) - irrelevant material

AAT Case Management Guide

Applied Behavioural Analysis (ABA)

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Field	Content	Reference Documents
Title	**Applied Behavioural Analysis (ABA)**	
Purpose	This document is part of a suite of guidance documents for case managers to use in formulating their approach to managing individual cases before the Administrative Appeals Tribunal (**AAT**).	
Scope	ABA therapy refers to a non-pharmacological behavioural intervention to help children diagnosed with autism spectrum disorder (**ASD**), intellectual disability or developmental delay to develop skills in communication, self-care, and social interaction, and or reduce behaviours that are barriers to learning and participation. ABA is one of several different evidence-based approaches to support children with ASD. It is characterised by intensive interventions, delivered by trained personnel in a clinical or childcare environment.	Applied Behavioural Analysis (ABA) Therapy | Disability Support Guide Behavioural interventions | NDIS Autism CRC early intervention report | NDIS
Escalation to Hearing Oversight Committee (**HOC**)	If a matter is within the parameters of this document, the AAT Case Management Branch Manager may approve proceeding to hearing. Where there is substantial risk or the matter is outside the parameters of this document, the matter should be referred to HOC.	
Current National Disability Insurance Agency (**NDIA**) policy on the subject	The AAT process is often seen as stressful and adversarial by the participants and our focus should be on resolving issues as practicably and quickly as possible. The role of the NDIA is to assist the AAT and the participant in reaching the best possible resolution for the participant by agreement. The NDIA will fund ABA therapy when the NDIA is satisfied it is a reasonable and necessary support. Where ABA therapy is to be funded as an early intervention support, the NDIA must also be satisfied that it is likely to reduce a participant's need for future disability supports. Supports for children with ASD should be evidence-based and delivered using a family-centred approach that incorporates individual planning. ABA therapy is	NDIA Dispute Resolution Policy Appendix B to the *Legal Services Directions 2017* Section 34(1) of the *National Disability Insurance Scheme Act 2013* Rules 3.2 and 3.3 of the *National Disability Insurance Scheme (Supports for Participants) Rules 2013*

	likely to NOT be delivered with a family centred approach and more likely to be delivered in an allied health clinic or childcare/school environment.	*Operational Guideline – Applying to the NDIS* *Operational Guideline – Early childhood approach* ECIA National Guidelines – Best Practice in Early Childhood Intervention Council of Australian Governments (**COAG**) – Principles to determine responsibilities of the NDIS and other service systems
NDIA Posture in relation to this subject	It is important that the NDIA closely consider a participant's unique circumstances, including their functional impairment, individual goals and aspirations, and evidence which considers their specific circumstances. The NDIA is likely to fund up to 20 hours per week of ABA therapy where it is considered likely to be effective and beneficial. Evidence from a meta-analysis of clinical studies indicates that it is unlikely that more than 15 hours per week of ABA will be effective and beneficial. Where more than 20 hours of ABA is requested, the NDIA is likely to run the matter to hearing. The matter will turn on the question of the participant's age, and their own capacity as well as their family's capacity to meet the time obligations of ABA therapy. Where a participant has commenced school and requests more than 10 hours of ABA per week, the NDIA must consider the capacity of the participant and their family to sustain both full-time schooling and intensive therapy.	*Operational Guideline – Creating your plan* *CXZS v National Disability Insurance Agency* [2021] AATA 511 Intervention Recommendations for Children with Autism in Light of a Changing Evidence Base | Report, Dr M Sandbank et al *(Generalised findings, specific to older children)* Autism CRC early intervention report | NDIS The Department of Defence (USA) | Comprehensive Autism Care Demonstration Annual Report 2021 A Multisite Randomized Controlled Trial Comparing the Effects

		of Intervention Intensity and Intervention Style on Outcomes for Young Children With Autism - ScienceDirect
Evidence recommended to inform NDIA position in a specific matter before the Administrative Appeals Tribunal (**AAT**)	To consider funding for ABA therapy, the NDIA requires evidence of a relevant diagnosis from a paediatrician, psychiatrist, psychologist, or a specialist multi-disciplinary team. The Diagnostic and Statistical Manual of Mental Disorders, fifth edition (**DSM-5**) is the NDIA's preferred diagnostic standard. Clinical evidence that ABA therapy satisfies the criteria in section 34(1) is also required to be provided by a psychologist, occupational therapist, paediatrician or, where a participant has received ABA therapy previously - an ABA therapist. Clinical evidence must address the link between ABA therapy and a participant's goals and specify how the requested number of hours of ABA therapy will be effective in assisting the participant to achieve those goals. Evidence from a behavioural paediatrician who has assessed the participant in person is recommended.	Australia's First National Guideline for the Assessment and Diagnosis of Autism Spectrum Disorders | Autism CRC List A: Conditions that are likely to meet the disability requirements | NDIS Section 34(1) of the *National Disability Insurance Scheme Act 2013* Rules 3.2 and 3.3 of the *National Disability Insurance Scheme (Supports for Participants) Rules 2013* Persons Giving Expert and Opinion Evidence Guideline | Administrative Appeals Tribunal
Other considerations	The NDIA must also be satisfied that ABA therapy meets the National Disability Insurance Scheme (**NDIS**) funding criteria – in particular, that it: • is unlikely to cause harm to a participant or pose a risk to others; and • is not duplicated by other funded supports. Consider the context and circumstances of the family and their capacity to support the delivery of 15 – 20 hours of intervention in the learning environment of the child (usually the home or school).	Rule 5.1 of the *National Disability Insurance Scheme (Supports for Participants) Rules 2013* How we work out if a support meets the funding criteria | NDIS

	Also consider: • children with greater baseline cognitive skills and higher adaptive behaviour scores at baseline have better outcomes from early intensive ABA therapy; and • younger children have better outcomes from ABA therapy. The NDIA must also have regard to a participant's choice and control in the pursuit of their goals and the planning and delivery of their supports.	Autism CRC early intervention report | NDIS Section 3 of the *National Disability Insurance Scheme Act 2013*
Previous matters that may advise the NDIA position	The AAT will not consider whether ABA therapy is an effective early behavioural intervention strategy for children diagnosed with ASD, but whether ABA therapy satisfies the criteria in section 34(1), which will be determined on the facts of each case. When considering funding for ABA therapy, the NDIA must also consider the promotion of an applicant's choice and control in the pursuit of their goals and the planning and delivery of their supports. It is the responsibility of the NDIA to show that ABA therapy can be substituted with other mainstream therapies and achieve the same outcomes for the applicant.	*FRCT v National Disability Insurance Agency* [2019] AATA 1478 *WKZQ v National Disability Insurance Agency* [2019] AATA 1480 *CXZS v National Disability Insurance Agency* [2021] AATA 511
Document admin	Quality, Strategy and Training	4 January 2023
Approved	Matthew Swainson, Chief Counsel	