Supplementary Online Content

eAppendix. Formulas Used for Conversion of the Various Effect Sizes Into Log Odds Ratios

eFigure 1. Forest Plot of All 66 Effect Sizes by Screen Type
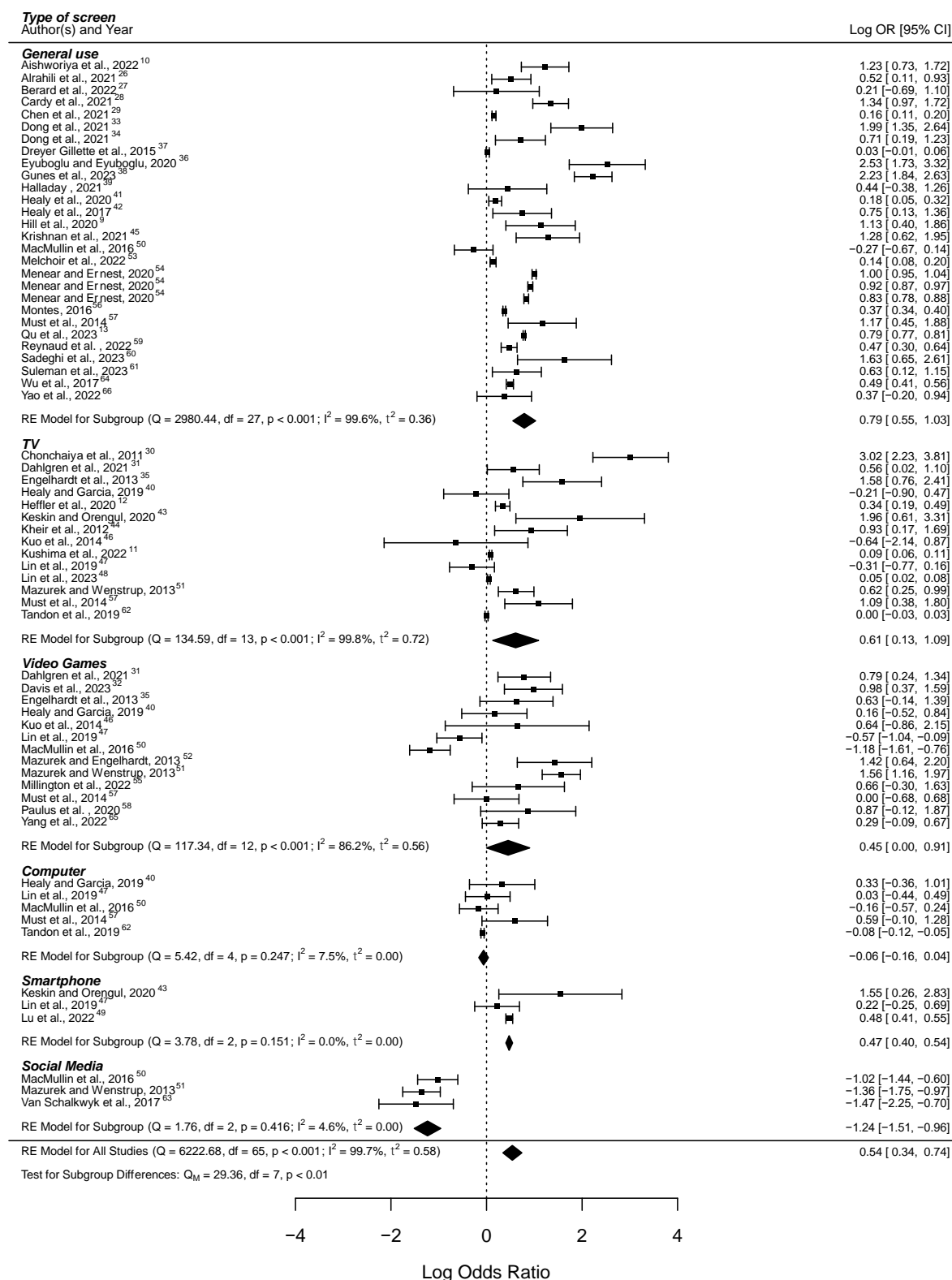
eFigure 2. Forest Plot by Age Groups of the 28 Effect Sizes of General Screen Use
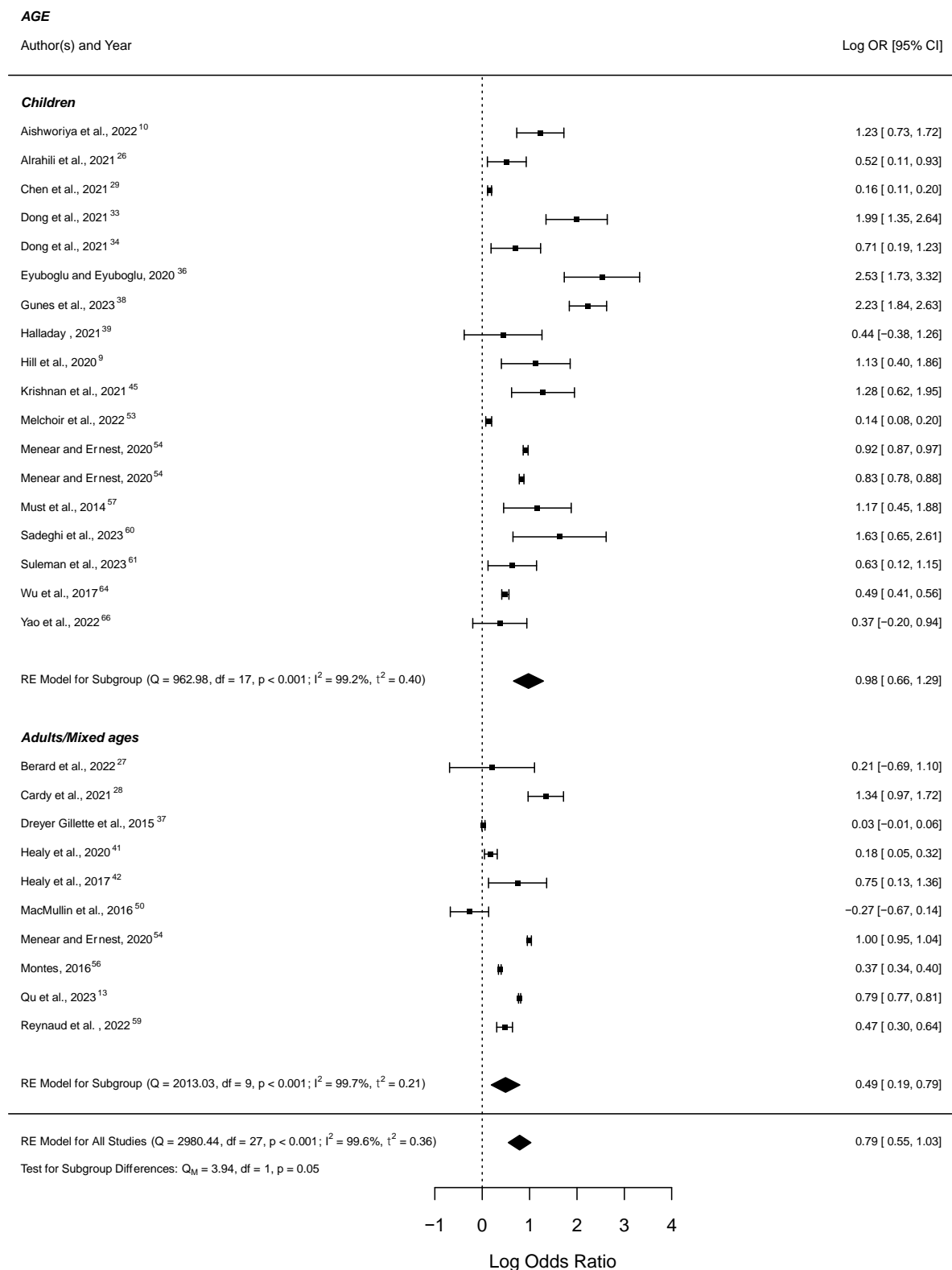
eFigure 3. Forest Plot by the Type of Autism Spectrum Disorder (ASD) Measure of 28 Effect Sizes of General Screen Use
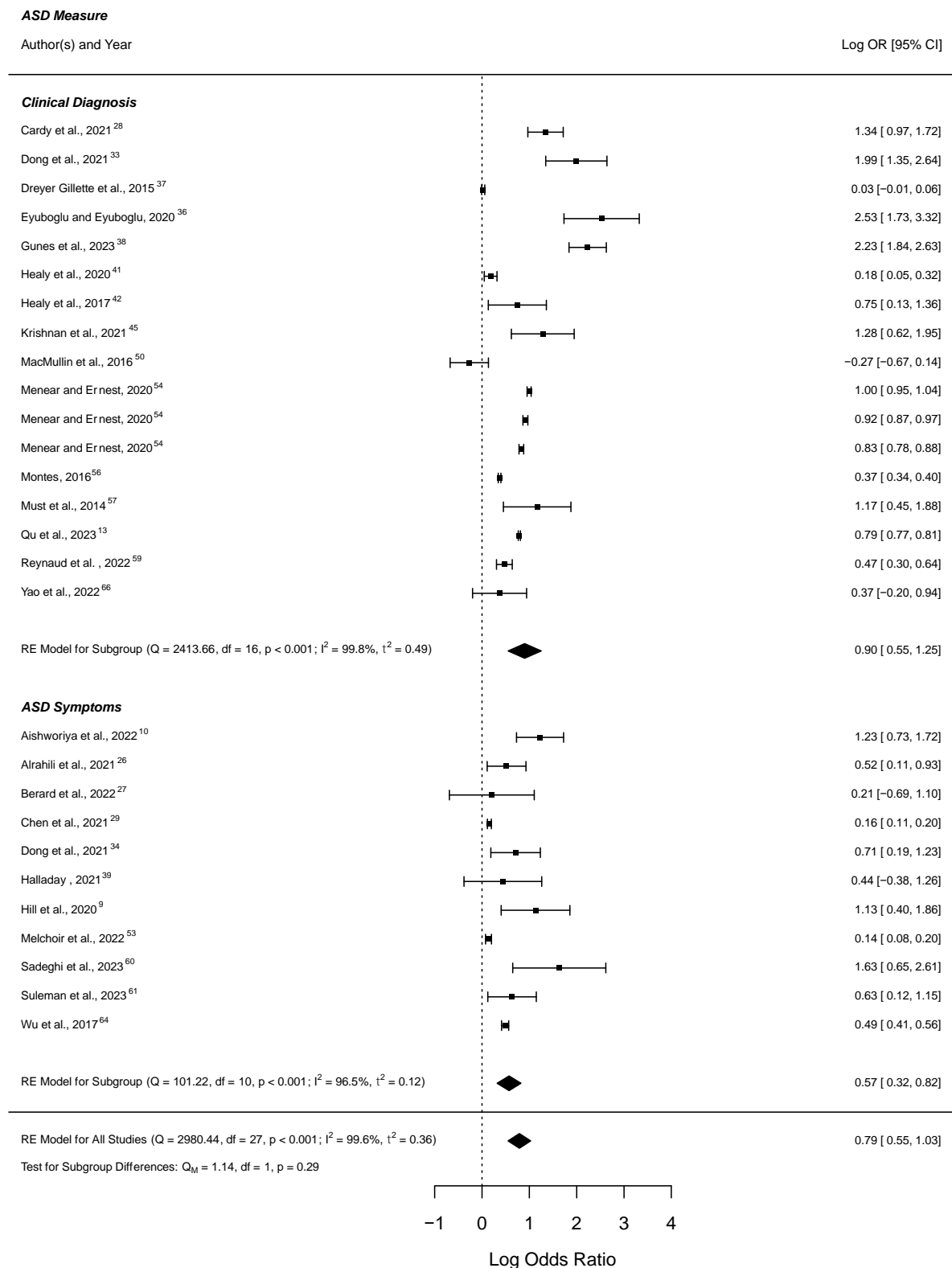
eFigure 4. Forest Plot of the 6 Effect Sizes of Longitudinal Studies
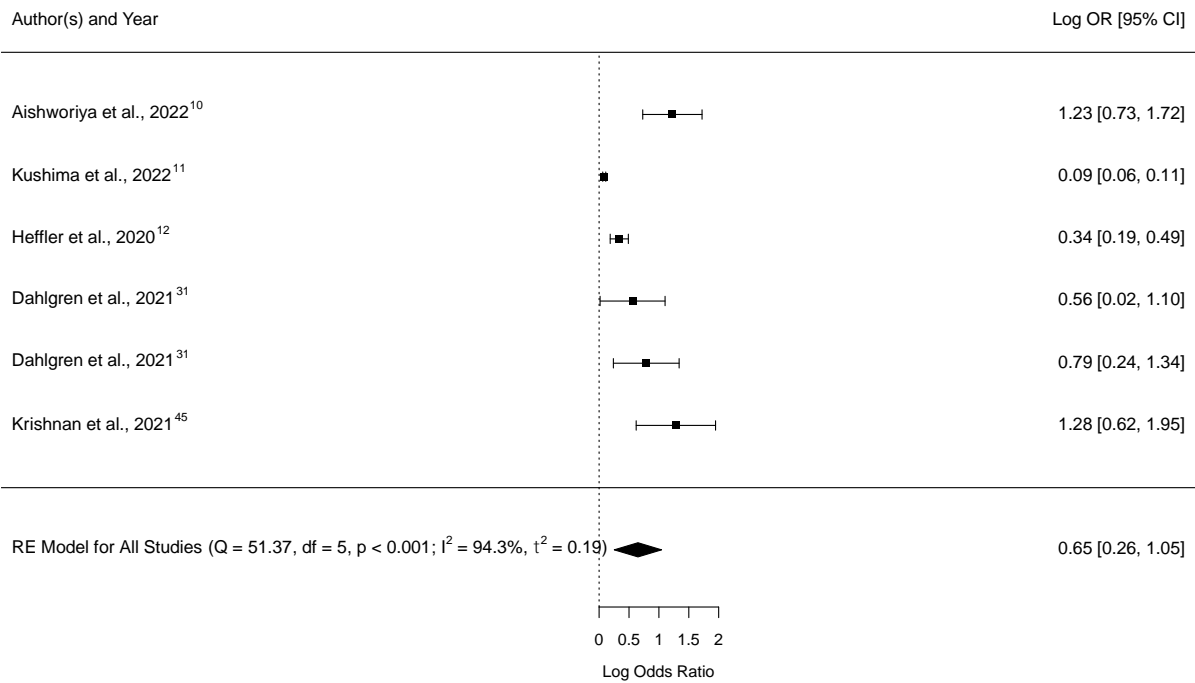
eFigure 5. Forest Plot by Type of Screen of 66 Effect Sizes Using Fisher *z* Scores

eFigure 6. Forest Plot by Age Groups of the 28 Effect Sizes of General Screen Use Based on Fisher *z* Scores

eFigure 7. Forest Plot by Type of Autism Spectrum Disorder (ASD) Measure of the 28 Effect Sizes of General Screen Use Based on Fisher *z* Scores

This supplementary material has been provided by the authors to give readers additional information about their work.

eAppendix. Formulas Used for Conversion of the Various Effect Sizes Into Log Odds Ratios

From Cohen's *d*:

1. $\log Odds\ Ratio = d\frac{\pi}{\sqrt{3}}$

2. $V_{logOddaRatio} = V_d\frac{\pi^3}{3}$

From Pearson's *r*:

Pearson's *r* is first transformed to *d* and V_d as follows:

3. $d = \frac{2r}{\sqrt{1-r^2}}$

4. $V_d = \frac{4V_r}{(1-r^2)^3}$,

Next, *d* and V_d are converted to log OR and $V_{logOddaRatio}$ using formulas (1) and (2).

Type of screen
Author(s) and Year

Log OR [95% CI]

General use
Aishworiya et al., 2022 [10] — 1.23 [0.73, 1.72]
Alrahili et al., 2021 [26] — 0.52 [0.11, 0.93]
Berard et al., 2022 [27] — 0.21 [−0.69, 1.10]
Cardy et al., 2021 [28] — 1.34 [0.97, 1.72]
Chen et al., 2021 [29] — 0.16 [0.11, 0.20]
Dong et al., 2021 [33] — 1.99 [1.35, 2.64]
Dong et al., 2021 [34] — 0.71 [0.19, 1.23]
Dreyer Gillette et al., 2015 [37] — 0.03 [−0.01, 0.06]
Eyuboglu and Eyuboglu, 2020 [36] — 2.53 [1.73, 3.32]
Gunes et al., 2023 [38] — 2.23 [1.84, 2.63]
Halladay , 2021 [39] — 0.44 [−0.38, 1.26]
Healy et al., 2020 [41] — 0.18 [0.05, 0.32]
Healy et al., 2017 [42] — 0.75 [0.13, 1.36]
Hill et al., 2020 [9] — 1.13 [0.40, 1.86]
Krishnan et al., 2021 [45] — 1.28 [0.62, 1.95]
MacMullin et al., 2016 [50] — −0.27 [−0.67, 0.14]
Melchoir et al., 2022 [53] — 0.14 [0.08, 0.20]
Menear and Ernest, 2020 [54] — 1.00 [0.95, 1.04]
Menear and Ernest, 2020 [54] — 0.92 [0.87, 0.97]
Menear and Ernest, 2020 [54] — 0.83 [0.78, 0.88]
Montes, 2016 [56] — 0.37 [0.34, 0.40]
Must et al., 2014 [57] — 1.17 [0.45, 1.88]
Qu et al., 2023 [13] — 0.79 [0.77, 0.81]
Reynaud et al. , 2022 [59] — 0.47 [0.30, 0.64]
Sadeghi et al., 2023 [60] — 1.63 [0.65, 2.61]
Suleman et al., 2023 [61] — 0.63 [0.12, 1.15]
Wu et al., 2017 [64] — 0.49 [0.41, 0.56]
Yao et al., 2022 [66] — 0.37 [−0.20, 0.94]
RE Model for Subgroup (Q = 2980.44, df = 27, p < 0.001; I^2 = 99.6%, t^2 = 0.36) — 0.79 [0.55, 1.03]

TV
Chonchaiya et al., 2011 [30] — 3.02 [2.23, 3.81]
Dahlgren et al., 2021 [31] — 0.56 [0.02, 1.10]
Engelhardt et al., 2013 [35] — 1.58 [0.76, 2.41]
Healy and Garcia, 2019 [40] — −0.21 [−0.90, 0.47]
Heffler et al., 2020 [12] — 0.34 [0.19, 0.49]
Keskin and Orengul, 2020 [43] — 1.96 [0.61, 3.31]
Kheir et al., 2012 [44] — 0.93 [0.17, 1.69]
Kuo et al., 2014 [46] — −0.64 [−2.14, 0.87]
Kushima et al., 2022 [11] — 0.09 [0.06, 0.11]
Lin et al., 2019 [47] — −0.31 [−0.77, 0.16]
Lin et al., 2023 [48] — 0.05 [0.02, 0.08]
Mazurek and Wenstrup, 2013 [51] — 0.62 [0.25, 0.99]
Must et al., 2014 [57] — 1.09 [0.38, 1.80]
Tandon et al., 2019 [62] — 0.00 [−0.03, 0.03]
RE Model for Subgroup (Q = 134.59, df = 13, p < 0.001; I^2 = 99.8%, t^2 = 0.72) — 0.61 [0.13, 1.09]

Video Games
Dahlgren et al., 2021 [31] — 0.79 [0.24, 1.34]
Davis et al., 2023 [32] — 0.98 [0.37, 1.59]
Engelhardt et al., 2013 [35] — 0.63 [−0.14, 1.39]
Healy and Garcia, 2019 [40] — 0.16 [−0.52, 0.84]
Kuo et al., 2014 [46] — 0.64 [−0.86, 2.15]
Lin et al., 2019 [47] — −0.57 [−1.04, −0.09]
MacMullin et al., 2016 [50] — −1.18 [−1.61, −0.76]
Mazurek and Engelhardt, 2013 [52] — 1.42 [0.64, 2.20]
Mazurek and Wenstrup, 2013 [51] — 1.56 [1.16, 1.97]
Millington et al., 2022 [55] — 0.66 [−0.30, 1.63]
Must et al., 2014 [57] — 0.00 [−0.68, 0.68]
Paulus et al. , 2020 [58] — 0.87 [−0.12, 1.87]
Yang et al., 2022 [65] — 0.29 [−0.09, 0.67]
RE Model for Subgroup (Q = 117.34, df = 12, p < 0.001; I^2 = 86.2%, t^2 = 0.56) — 0.45 [0.00, 0.91]

Computer
Healy and Garcia, 2019 [40] — 0.33 [−0.36, 1.01]
Lin et al., 2019 [47] — 0.03 [−0.44, 0.49]
MacMullin et al., 2016 [50] — −0.16 [−0.57, 0.24]
Must et al., 2014 [57] — 0.59 [−0.10, 1.28]
Tandon et al., 2019 [62] — −0.08 [−0.12, −0.05]
RE Model for Subgroup (Q = 5.42, df = 4, p = 0.247; I^2 = 7.5%, t^2 = 0.00) — −0.06 [−0.16, 0.04]

Smartphone
Keskin and Orengul, 2020 [43] — 1.55 [0.26, 2.83]
Lin et al., 2019 [47] — 0.22 [−0.25, 0.69]
Lu et al., 2022 [49] — 0.48 [0.41, 0.55]
RE Model for Subgroup (Q = 3.78, df = 2, p = 0.151; I^2 = 0.0%, t^2 = 0.00) — 0.47 [0.40, 0.54]

Social Media
MacMullin et al., 2016 [50] — −1.02 [−1.44, −0.60]
Mazurek and Wenstrup, 2013 [51] — −1.36 [−1.75, −0.97]
Van Schalkwyk et al., 2017 [63] — −1.47 [−2.25, −0.70]
RE Model for Subgroup (Q = 1.76, df = 2, p = 0.416; I^2 = 4.6%, t^2 = 0.00) — −1.24 [−1.51, −0.96]

RE Model for All Studies (Q = 6222.68, df = 65, p < 0.001; I^2 = 99.7%, t^2 = 0.58) — 0.54 [0.34, 0.74]

Test for Subgroup Differences: Q_M = 29.36, df = 7, p < 0.01

−4 −2 0 2 4

Log Odds Ratio

eFigure 2. Forest Plot by Age Groups of the 28 Effect Sizes of General Screen Use

eFigure 3. Forest Plot by the Type of Autism Spectrum Disorder (ASD) Measure of 28 Effect Sizes of General Screen Use

ASD Measure

Author(s) and Year   Log OR [95% CI]

Clinical Diagnosis

Author(s) and Year	Log OR [95% CI]
Cardy et al., 2021 [28]	1.34 [0.97, 1.72]
Dong et al., 2021 [33]	1.99 [1.35, 2.64]
Dreyer Gillette et al., 2015 [37]	0.03 [−0.01, 0.06]
Eyuboglu and Eyuboglu, 2020 [36]	2.53 [1.73, 3.32]
Gunes et al., 2023 [38]	2.23 [1.84, 2.63]
Healy et al., 2020 [41]	0.18 [0.05, 0.32]
Healy et al., 2017 [42]	0.75 [0.13, 1.36]
Krishnan et al., 2021 [45]	1.28 [0.62, 1.95]
MacMullin et al., 2016 [50]	−0.27 [−0.67, 0.14]
Menear and Ernest, 2020 [54]	1.00 [0.95, 1.04]
Menear and Ernest, 2020 [54]	0.92 [0.87, 0.97]
Menear and Ernest, 2020 [54]	0.83 [0.78, 0.88]
Montes, 2016 [56]	0.37 [0.34, 0.40]
Must et al., 2014 [57]	1.17 [0.45, 1.88]
Qu et al., 2023 [13]	0.79 [0.77, 0.81]
Reynaud et al., 2022 [59]	0.47 [0.30, 0.64]
Yao et al., 2022 [66]	0.37 [−0.20, 0.94]

RE Model for Subgroup (Q = 2413.66, df = 16, p < 0.001; I^2 = 99.8%, t^2 = 0.49)   0.90 [0.55, 1.25]

ASD Symptoms

Author(s) and Year	Log OR [95% CI]
Aishworiya et al., 2022 [10]	1.23 [0.73, 1.72]
Alrahili et al., 2021 [26]	0.52 [0.11, 0.93]
Berard et al., 2022 [27]	0.21 [−0.69, 1.10]
Chen et al., 2021 [29]	0.16 [0.11, 0.20]
Dong et al., 2021 [34]	0.71 [0.19, 1.23]
Halladay, 2021 [39]	0.44 [−0.38, 1.26]
Hill et al., 2020 [9]	1.13 [0.40, 1.86]
Melchoir et al., 2022 [53]	0.14 [0.08, 0.20]
Sadeghi et al., 2023 [60]	1.63 [0.65, 2.61]
Suleman et al., 2023 [61]	0.63 [0.12, 1.15]
Wu et al., 2017 [64]	0.49 [0.41, 0.56]

RE Model for Subgroup (Q = 101.22, df = 10, p < 0.001; I^2 = 96.5%, t^2 = 0.12)   0.57 [0.32, 0.82]

RE Model for All Studies (Q = 2980.44, df = 27, p < 0.001; I^2 = 99.6%, t^2 = 0.36)   0.79 [0.55, 1.03]

Test for Subgroup Differences: Q_M = 1.14, df = 1, p = 0.29

−1   0   1   2   3   4

Log Odds Ratio

eFigure 4. Forest Plot of the 6 Effect Sizes of Longitudinal Studies

Author(s) and Year		Log OR [95% CI]
Aishworiya et al., 2022[10]		1.23 [0.73, 1.72]
Kushima et al., 2022[11]		0.09 [0.06, 0.11]
Heffler et al., 2020[12]		0.34 [0.19, 0.49]
Dahlgren et al., 2021[31]		0.56 [0.02, 1.10]
Dahlgren et al., 2021[31]		0.79 [0.24, 1.34]
Krishnan et al., 2021[45]		1.28 [0.62, 1.95]
RE Model for All Studies (Q = 51.37, df = 5, p < 0.001; I^2 = 94.3%, t^2 = 0.19)		0.65 [0.26, 1.05]

Log Odds Ratio

0   0.5   1   1.5   2

eFigure 5. Forest Plot by Type of Screen of 66 Effect Sizes Using Fisher *z* Scores

Type of screen
Author(s) and Year   Fisher's z [95% CI]

General use
Aishworiya et al., 2022 [10]   0.33 [0.20, 0.46]
Alrahili et al., 2021 [26]   0.14 [0.03, 0.25]
Berard et al., 2022 [27]   0.06 [−0.05, 0.16]
Cardy et al., 2021 [28]   0.36 [0.27, 0.46]
Chen et al., 2021 [29]   0.04 [0.03, 0.05]
Dong et al., 2021 [33]   0.53 [0.37, 0.68]
Dong et al., 2021 [34]   0.19 [0.18, 0.20]
Dreyer Gillette et al., 2015 [37]   0.01 [−0.00, 0.02]
Eyuboglu and Eyuboglu, 2020 [36]   0.65 [0.47, 0.83]
Gunes et al., 2023 [38]   0.58 [0.49, 0.67]
Halladay , 2021 [39]   0.12 [−0.11, 0.35]
Healy et al., 2020 [41]   0.05 [0.01, 0.09]
Healy et al., 2017 [42]   0.20 [0.04, 0.37]
Hill et al., 2020 [9]   0.31 [0.11, 0.50]
Krishnan et al., 2021 [45]   0.35 [0.17, 0.52]
MacMullin et al., 2016 [50]   −0.07 [−0.19, 0.04]
Melchoir et al., 2022 [53]   0.04 [0.02, 0.06]
Menear and Ernest, 2020 [54]   0.27 [0.26, 0.28]
Menear and Ernest, 2020 [54]   0.25 [0.24, 0.26]
Menear and Ernest, 2020 [54]   0.23 [0.21, 0.24]
Montes, 2016 [56]   0.10 [0.09, 0.11]
Must et al., 2014 [57]   0.32 [0.13, 0.50]
Qu et al., 2023 [13]   0.22 [0.21, 0.22]
Reynaud et al. , 2022 [59]   0.13 [0.08, 0.17]
Sadeghi et al., 2023 [60]   0.44 [0.19, 0.69]
Suleman et al., 2023 [61]   0.17 [0.03, 0.31]
Wu et al., 2017 [64]   0.13 [0.11, 0.15]
Yao et al., 2022 [66]   0.10 [−0.06, 0.26]

RE Model for Subgroup (Q = 3100.18, df = 27, p < 0.001; I^2 = 99.7%, t^2 = 0.03)   0.21 [0.15, 0.28]

TV
Chonchaiya et al., 2011 [30]   0.76 [0.59, 0.93]
Dahlgren et al., 2021 [31]   0.15 [0.00, 0.30]
Engelhardt et al., 2013 [35]   0.42 [0.21, 0.63]
Healy and Garcia, 2019 [40]   −0.06 [−0.25, 0.13]
Heffler et al., 2020 [12]   0.09 [0.05, 0.13]
Keskin and Orengul, 2020 [43]   0.52 [0.18, 0.85]
Kheir et al., 2012 [44]   0.25 [0.05, 0.46]
Kuo et al., 2014 [46]   −0.17 [−0.60, 0.25]
Kushima et al., 2022 [11]   0.02 [0.02, 0.03]
Lin et al., 2019 [47]   −0.08 [−0.21, 0.05]
Lin et al., 2023 [48]   0.01 [0.01, 0.02]
Mazurek and Wenstrup, 2013 [51]   0.17 [0.07, 0.27]
Must et al., 2014 [57]   0.30 [0.11, 0.48]
Tandon et al., 2019 [62]   0.00 [−0.01, 0.01]

RE Model for Subgroup (Q = 157.43, df = 13, p < 0.001; I^2 = 99.8%, t^2 = 0.05)   0.17 [0.04, 0.29]

Video Games
Dahlgren et al., 2021 [31]   0.22 [0.07, 0.37]
Davis et al., 2023 [32]   0.27 [0.10, 0.43]
Engelhardt et al., 2013 [35]   0.17 [−0.04, 0.38]
Healy and Garcia, 2019 [40]   0.04 [−0.14, 0.23]
Kuo et al., 2014 [46]   0.18 [−0.25, 0.60]
Lin et al., 2019 [47]   −0.16 [−0.29, −0.03]
MacMullin et al., 2016 [50]   −0.32 [−0.43, −0.21]
Mazurek and Engelhardt, 2013 [52]   0.38 [0.18, 0.59]
Mazurek and Wenstrup, 2013 [51]   0.42 [0.32, 0.52]
Millington et al., 2022 [55]   0.18 [−0.08, 0.45]
Must et al., 2014 [57]   0.00 [−0.19, 0.19]
Paulus et al. , 2020 [58]   0.24 [−0.03, 0.51]
Yang et al., 2022 [65]   0.08 [−0.03, 0.19]

RE Model for Subgroup (Q = 124.83, df = 12, p < 0.001; I^2 = 86.5%, t^2 = 0.04)   0.12 [0.00, 0.25]

Computer
Healy and Garcia, 2019 [40]   0.09 [−0.10, 0.28]
Lin et al., 2019 [47]   0.01 [−0.12, 0.14]
MacMullin et al., 2016 [50]   −0.04 [−0.16, 0.07]
Must et al., 2014 [57]   0.16 [−0.03, 0.35]
Tandon et al., 2019 [62]   −0.02 [−0.03, −0.01]

RE Model for Subgroup (Q = 5.40, df = 4, p = 0.249; I^2 = 7.6%, t^2 = 0.00)   −0.02 [−0.04, 0.01]

Smartphone
Keskin and Orengul, 2020 [43]   0.41 [0.08, 0.75]
Lin et al., 2019 [47]   0.06 [−0.07, 0.19]
Lu et al., 2022 [49]   0.13 [0.11, 0.15]

RE Model for Subgroup (Q = 3.84, df = 2, p = 0.147; I^2 = 0.2%, t^2 = 0.00)   0.13 [0.11, 0.15]

Social Media
MacMullin et al., 2016 [50]   −0.28 [−0.39, −0.17]
Mazurek and Wenstrup, 2013 [51]   −0.37 [−0.47, −0.27]
Van Schalkwyk et al., 2017 [63]   −0.40 [−0.60, −0.19]

RE Model for Subgroup (Q = 1.74, df = 2, p = 0.420; I^2 = 3.0%, t^2 = 0.00)   −0.34 [−0.41, −0.26]

RE Model for All Studies (Q = 6844.39, df = 65, p < 0.001; I^2 = 99.7%, t^2 = 0.04)   0.15 [0.09, 0.20]

Test for Subgroup Differences: Q_M = 30.02, df = 7, p < 0.01

−1   0   1

Fisher's z

eFigure 6. Forest Plot by Age Groups of the 28 Effect Sizes of General Screen Use Based on Fisher *z* Scores
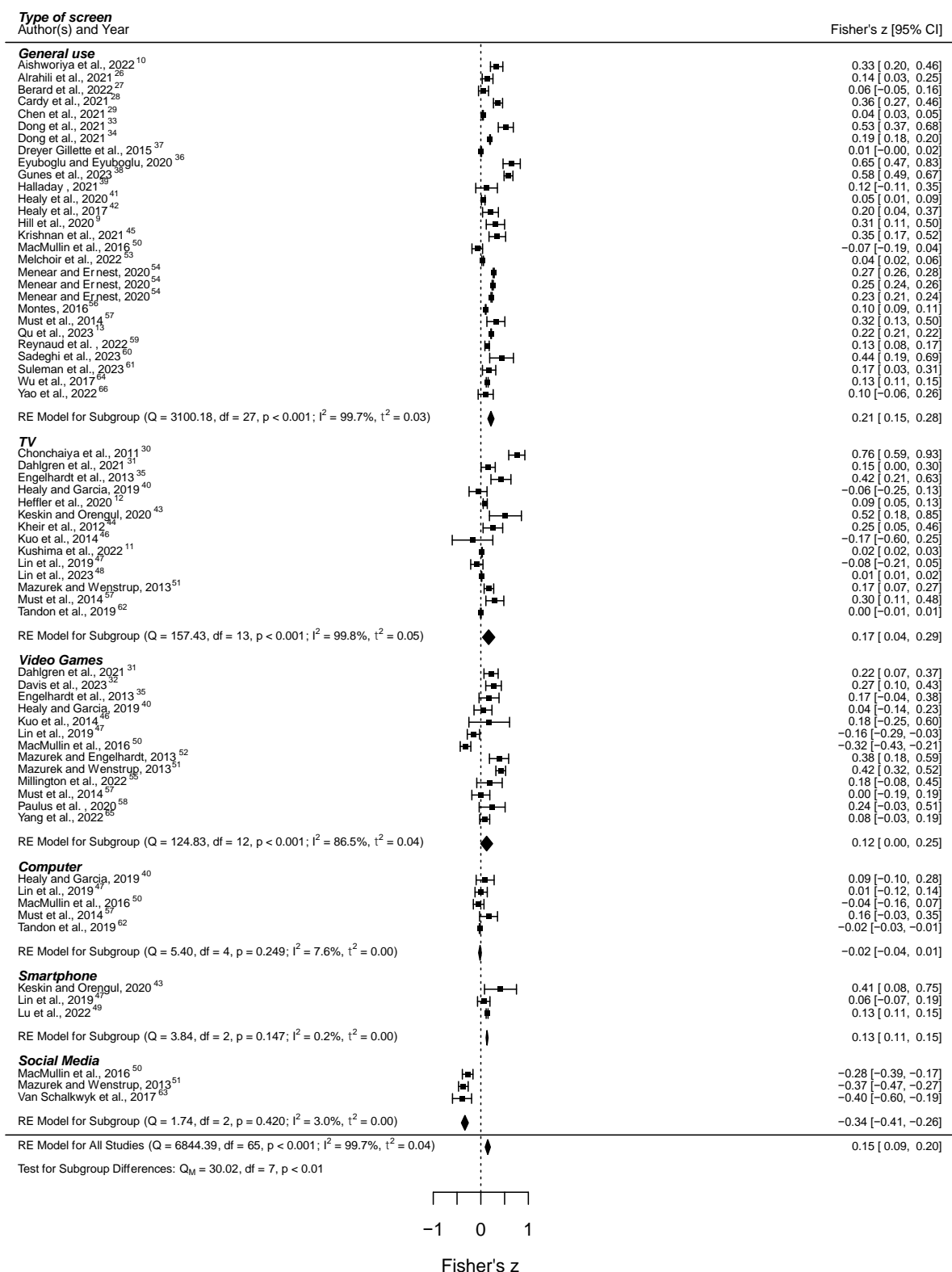
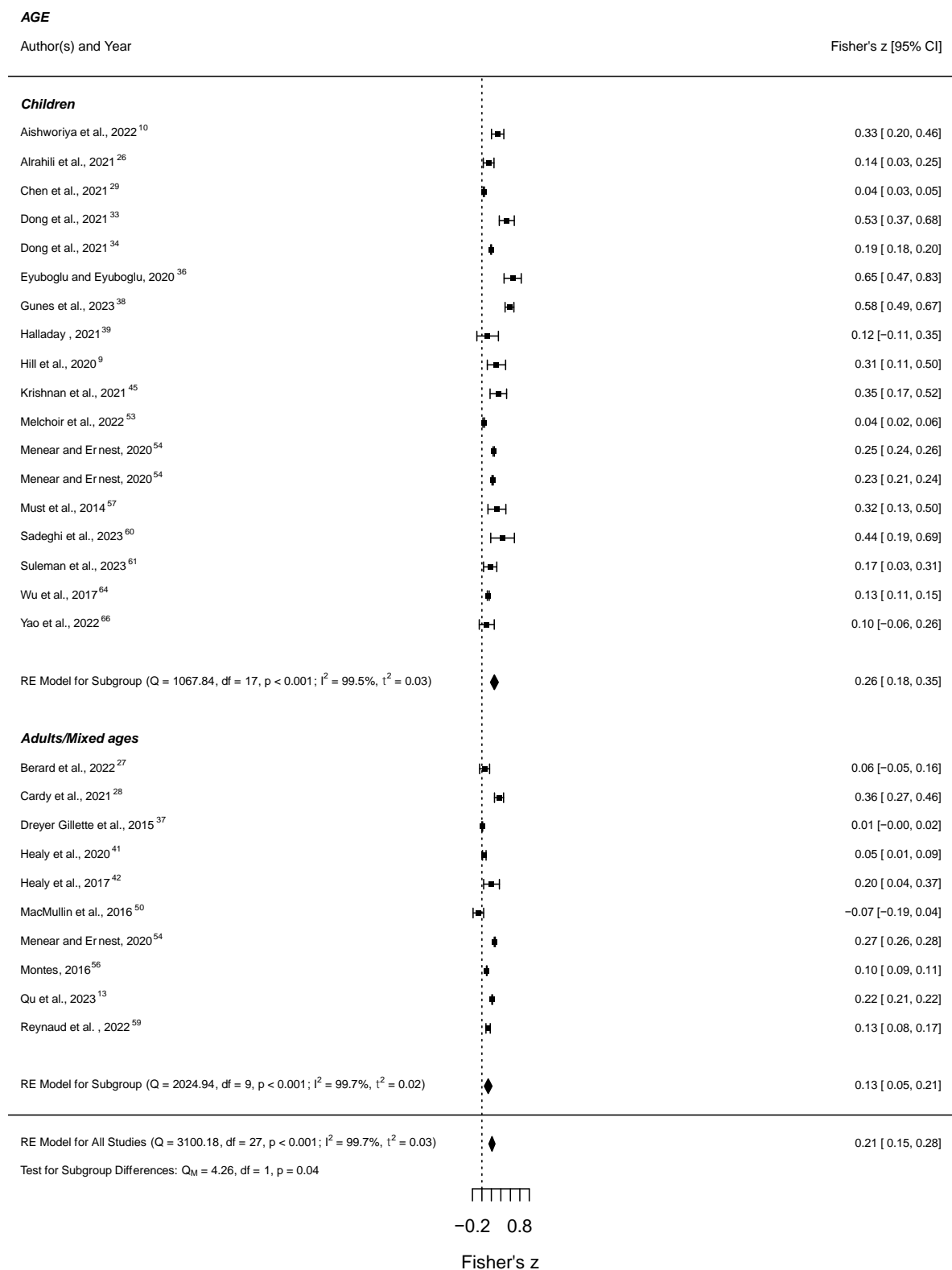**eFigure 7.** Forest Plot by Type of Autism Spectrum Disorder (ASD) Measure of the 28 Effect Sizes of General Screen Use Based on Fisher *z* Scores

ASD Measure

Author(s) and Year — Fisher's z [95% CI]

Clinical Diagnosis

Study	Fisher's z [95% CI]
Cardy et al., 2021 [28]	0.36 [0.27, 0.46]
Dong et al., 2021 [33]	0.53 [0.37, 0.68]
Dreyer Gillette et al., 2015 [37]	0.01 [−0.00, 0.02]
Eyuboglu and Eyuboglu, 2020 [36]	0.65 [0.47, 0.83]
Gunes et al., 2023 [38]	0.58 [0.49, 0.67]
Healy et al., 2020 [41]	0.05 [0.01, 0.09]
Healy et al., 2017 [42]	0.20 [0.04, 0.37]
Krishnan et al., 2021 [45]	0.35 [0.17, 0.52]
MacMullin et al., 2016 [50]	−0.07 [−0.19, 0.04]
Menear and Ernest, 2020 [54]	0.27 [0.26, 0.28]
Menear and Ernest, 2020 [54]	0.25 [0.24, 0.26]
Menear and Ernest, 2020 [54]	0.23 [0.21, 0.24]
Montes, 2016 [56]	0.10 [0.09, 0.11]
Must et al., 2014 [57]	0.32 [0.13, 0.50]
Qu et al., 2023 [13]	0.22 [0.21, 0.22]
Reynaud et al. , 2022 [59]	0.13 [0.08, 0.17]
Yao et al., 2022 [66]	0.10 [−0.06, 0.26]
RE Model for Subgroup (Q = 2435.88, df = 16, p < 0.001; I^2 = 99.8%, t^2 = 0.03)	0.24 [0.15, 0.34]

ASD Symptoms

Study	Fisher's z [95% CI]
Aishworiya et al., 2022 [10]	0.33 [0.20, 0.46]
Alrahili et al., 2021 [26]	0.14 [0.03, 0.25]
Berard et al., 2022 [27]	0.06 [−0.05, 0.16]
Chen et al., 2021 [29]	0.04 [0.03, 0.05]
Dong et al., 2021 [34]	0.19 [0.18, 0.20]
Halladay , 2021 [39]	0.12 [−0.11, 0.35]
Hill et al., 2020 [9]	0.31 [0.11, 0.50]
Melchoir et al., 2022 [53]	0.04 [0.02, 0.06]
Sadeghi et al., 2023 [60]	0.44 [0.19, 0.69]
Suleman et al., 2023 [61]	0.17 [0.03, 0.31]
Wu et al., 2017 [64]	0.13 [0.11, 0.15]
RE Model for Subgroup (Q = 532.37, df = 10, p < 0.001; I^2 = 98.3%, t^2 = 0.01)	0.15 [0.09, 0.22]

RE Model for All Studies (Q = 3100.18, df = 27, p < 0.001; I^2 = 99.7%, t^2 = 0.03) — 0.21 [0.15, 0.28]

Test for Subgroup Differences: Q$_M$ = 1.26, df = 1, p = 0.26

−0.2   0.8

Fisher's z