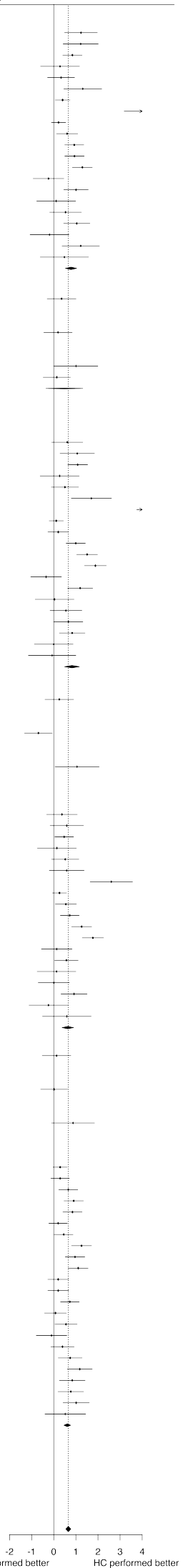
GENERAL INTELLIGENCE

Study	Std. Mean Difference IV, Random, 95% CI
Full-scale IQ	
Sleep-related breathing disorders	
Blunden 2005 (PS)	1.23 [0.49; 1.97]
Blunden 2005 (PS + BSP)	1.22 [0.43; 2.01]
Bourke 2011 (PS)	0.84 [0.41; 1.28]
Shetty 2023 (PS)	0.29 [-0.60; 1.17]
Hagström 2020 (PS)	0.33 [-0.28; 0.94]
Kennedy 2004 (PS)	1.31 [0.46; 2.17]
Gottlieb 2004 (PS/OSA)	0.40 [0.06; 0.74]
Blunden 2000 (PS/OSA)	4.53 [3.18; 5.87]
Kaemingk 2003 (SBD)	0.22 [-0.11; 0.54]
O Brien 2004 JSR (SBD)	0.61 [0.13; 1.08]
Kohler 2009 (SBD)	0.93 [0.50; 1.36]
Vitelli 2015 (SBD)	0.94 [0.50; 1.37]
Vitelli 2015 (SBD + obesity)	1.29 [0.85; 1.74]
Brockmann 2018 (Mild OSA)	-0.23 [-0.93; 0.46]
Bourke 2011 (mild OSA)	1.01 [0.46; 1.56]
Shetty 2023 (Mild OSA)	0.11 [-0.77; 0.99]
Tan 2014 (Mild and MS OSA)	0.53 [-0.18; 1.25]
Bourke 2011 (MS OSA)	1.04 [0.45; 1.63]
Shetty 2023 (MS OSA)	-0.19 [-1.07; 0.69]
Halbower 2006 (Severe OSA)	1.22 [0.38; 2.07]
Lewin 2002 (Severe OSA)	0.48 [-0.61; 1.57]
Total (95% CI)	**0.78 [0.53; 1.04]**
Insomnia disorders	
Blunden 2005 (BSP)	0.35 [-0.30; 1.01]
Central disorders of hypersomnolence	
Gagnon 2023 (Narcolepsy)	0.19 [-0.44; 0.83]
Sleep-related neurological disorders	
Bagglietto 2001 (Epilepsy)	1.01 [0.02; 2.00]
Piccinelli 2008 (Epilepsy)	0.14 [-0.47; 0.75]
Total (95% CI)	**0.48 [-0.35; 1.31]**
Verbal IQ	
Sleep-related breathing disorders	
Blunden 2005 (PS)	0.61 [-0.09; 1.31]
Blunden 2005 (PS + BSP)	1.06 [0.28; 1.84]
Bourke 2011 (PS)	1.08 [0.64; 1.53]
Shetty 2023 (PS)	0.27 [-0.61; 1.15]
Hagström 2020 (PS)	0.51 [-0.11; 1.12]
Kennedy 2004 (PS)	1.70 [0.79; 2.61]
Blunden 2000 (PS/OSA)	5.26 [3.75; 6.77]
Kaemingk 2003 (SBD)	0.11 [-0.21; 0.44]
O Brien 2004 JSR (SBD)	0.20 [-0.26; 0.67]
Kohler 2009 (PS)	1.00 [0.56; 1.43]
Vitelli 2015 (SBD)	1.51 [1.04; 1.98]
Vitelli 2015 (SBD + obesity)	1.88 [1.39; 2.37]
Brockmann 2018 (Mild OSA)	-0.35 [-1.04; 0.35]
Bourke 2011 (mild OSA)	1.19 [0.63; 1.76]
Shetty 2023 (Mild OSA)	0.04 [-0.84; 0.92]
Tan 2014 (Mild and MS OSA)	0.55 [-0.17; 1.27]
Montgomerry-Downs 2005 (Moderate OSA)	0.66 [0.01; 1.32]
Bourke 2011 (MS OSA)	0.83 [0.25; 1.41]
Shetty 2023 (MS OSA)	0.00 [-0.88; 0.88]
Lewin 2002 (Severe OSA)	-0.07 [-1.15; 1.00]
Total (95% CI)	**0.83 [0.49; 1.16]**
Insomnia disorders	
Blunden 2005 (BSP)	0.25 [-0.40; 0.90]
Central disorders of hypersomnolence	
Gagnon 2023 (Narcolepsy)	-0.69 [-1.32; -0.06]
Sleep-related neurological disorders	
Bagglietto 2001 (Epilepsy)	1.05 [0.06; 2.05]
Performance IQ	
Sleep-related breathing disorders	
Blunden 2005 (PS)	0.37 [-0.32; 1.07]
Blunden 2005 (PS + BSP)	0.59 [-0.16; 1.34]
Bourke 2011 (PS)	0.47 [0.05; 0.90]
Shetty 2023 (PS)	0.14 [-0.73; 1.02]
Hagström 2020 (PS)	0.52 [-0.10; 1.14]
Kennedy 2004 (PS)	0.58 [-0.20; 1.37]
Blunden 2000 (PS/OSA)	2.60 [1.65; 3.56]
Kaemingk 2003 (SBD)	0.26 [-0.06; 0.58]
O Brien 2004 JSR (SBD)	0.55 [0.07; 1.03]
Kohler 2009 (PS)	0.72 [0.30; 1.15]
Vitelli 2015 (SBD)	1.26 [0.81; 1.72]
Vitelli 2015 (SBD + obesity)	1.77 [1.29; 2.25]
Brockmann 2018 (Mild OSA)	0.13 [-0.56; 0.82]
Bourke 2011 (mild OSA)	0.57 [0.04; 1.10]
Shetty 2023 (Mild OSA)	0.13 [-0.75; 1.00]
Tan 2014 (Mild and MS OSA)	0.01 [-0.70; 0.71]
Bourke 2011 (MS OSA)	0.92 [0.33; 1.50]
Shetty 2023 (MS OSA)	-0.24 [-1.12; 0.64]
Lewin 2002 (Severe OSA)	0.59 [-0.51; 1.69]
Total (95% CI)	**0.64 [0.38; 0.90]**
Insomnia disorders	
Blunden 2005 (BSP)	0.13 [-0.52; 0.78]
Central disorders of hypersomnolence	
Gagnon 2023 (Narcolepsy)	0.02 [-0.59; 0.62]
Sleep-related neurological disorders	
Bagglietto 2001 (Epilepsy)	0.87 [-0.10; 1.85]
Verbal and non-verbal reasoning	
Sleep-related breathing disorders	
Honaker 2009 (PS)	0.29 [-0.03; 0.61]
Bourke 2011 (PS)	0.29 [-0.13; 0.71]
Bourke 2011 (PS)	0.66 [0.23; 1.09]
Bourke 2011 (PS)	0.90 [0.46; 1.34]
Vitelli 2015 (SBD)	0.85 [0.41; 1.28]
Vitelli 2015 (SBD)	0.20 [-0.22; 0.62]
Vitelli 2015 (SBD)	0.45 [0.03; 0.87]
Vitelli 2015 (SBD)	1.26 [0.80; 1.71]
Vitelli 2015 (SBD)	0.96 [0.52; 1.40]
Vitelli 2015 (SBD)	1.11 [0.66; 1.55]
O Brien 2004 JSR (SBD)	0.20 [-0.27; 0.67]
O Brien 2004 JSR (SBD)	0.20 [-0.27; 0.67]
Kohler 2009 (PS)	0.73 [0.31; 1.15]
Giordani 2008 (OSA)	0.08 [-0.41; 0.57]
Giordani 2008 (OSA)	0.55 [0.05; 1.06]
Brockmann 2018 (Mild OSA)	-0.10 [-0.79; 0.59]
Bourke 2011 (mild OSA)	0.39 [-0.13; 0.92]
Bourke 2011 (mild OSA)	0.74 [0.21; 1.28]
Bourke 2011 (mild OSA)	1.18 [0.62; 1.74]
Bourke 2011 (MS OSA)	0.84 [0.26; 1.42]
Bourke 2011 (MS OSA)	0.77 [0.19; 1.35]
Bourke 2011 (MS OSA)	1.01 [0.42; 1.61]
Yuan 2012 (MS OSA)	0.52 [-0.40; 1.44]
Total (95% CI)	**0.61 [0.46; 0.77]**
Insomnia disorders	-
Central disorders of hypersomnolence	-
Sleep-related neurological disorders	-
Total (95% CI)	**0.66 [0.54; 0.77]**

Heterogeneity: Tau^2 = 0.2; Chi^2 = 343.62, df = 92 (P < 0.001); I^2 = 73%

Test for subgroup differences: Chi^2 = 29.91, df = 12 (P = 0.003)