

Table S1 Linear regression of the associations between weekend catch-up sleep and EFs classified by age.

Executive Function	Age (years)	No catch-up	0~1 hour	1~2 hours	>2 hours	<i>p</i> _{inter}
n (%)	6~9	775 (27.0%)	1337 (46.6%)	568 (19.8%)	189 (6.6%)	-
	10~12	473 (25.8%)	760 (41.5%)	418 (22.8%)	179 (9.8%)	
Inhibit	6~9	Ref	0.18 (-0.52, 0.88)	0.40 (-0.46, 1.27)	1.02 (-0.30, 2.35)	0.345
	10~12	Ref	-0.50 (-1.36, 0.36)	1.10 (0.09, 2.10)*	0.80 (-0.53, 2.14)	
Shift	6~9	Ref	-0.34 (-1.05, 0.36)	-0.36 (-1.23, 0.51)	1.33 (-0.00, 2.66)	0.800
	10~12	Ref	0.07 (-0.83, 0.98)	0.59 (-0.48, 1.65)	2.25 (0.84, 3.65)**	
Emotional Control	6~9	Ref	0.15 (-0.53, 0.83)	0.67 (-0.17, 1.50)	1.31 (0.03, 2.60)*	0.480
	10~12	Ref	-0.62 (-1.48, 0.23)	0.38 (-0.62, 1.39)	1.41 (0.08, 2.74)*	
Initiate	6~9	Ref	0.53 (-0.29, 1.35)	0.42 (-0.59, 1.43)	1.04 (-0.51, 2.60)	0.653
	10~12	Ref	-0.43 (-1.46, 0.60)	0.54 (-0.67, 1.75)	2.86 (1.26, 4.46)**	
Working Memory	6~9	Ref	0.27 (-0.57, 1.12)	0.05 (-0.99, 1.09)	0.37 (-1.23, 1.97)	0.980
	10~12	Ref	-1.35 (-2.39, -0.32)	0.12 (-1.10, 1.33)	2.10 (0.49, 3.71)*	
Plan/Organize	6~9	Ref	-0.26 (-1.18, 0.66)	0.44 (-0.69, 1.58)	0.65 (-1.09, 2.39)	0.282
	10~12	Ref	-0.95 (-2.06, 0.16)	0.63 (-0.67, 1.93)	2.52 (0.79, 4.24)**	
Organization of Materials	6~9	Ref	-0.48 (-1.25, 0.28)	-0.13 (-1.07, 0.81)	-0.10 (-1.54, 1.33)	0.222
	10~12	Ref	-0.57 (-1.51, 0.37)	-0.12 (-1.22, 0.98)	1.61 (0.15, 3.07)*	
Monitor	6~9	Ref	0.02 (-0.98, 1.02)	0.21 (-1.02, 1.45)	1.13 (-0.76, 3.03)	0.371
	10~12	Ref	-1.29 (-2.53, -0.05)	0.27 (-1.18, 1.72)	2.46 (0.53, 4.38)*	
BRI	6~9	Ref	0.08 (-0.59, 0.76)	0.39 (-0.44, 1.23)	1.39 (0.11, 2.67)*	0.409
	10~12	Ref	-0.45 (-1.30, 0.40)	0.83 (-0.17, 1.83)	1.66 (0.34, 2.99)*	
MI	6~9	Ref	0.02 (-0.87, 0.91)	0.24 (-0.86, 1.34)	0.72 (-0.97, 2.41)	0.338
	10~12	Ref	-1.06 (-2.15, 0.03)	0.37 (-0.91, 1.65)	2.67 (0.97, 4.37)**	

GEC(BRI+MI)	6~9	Ref	0.03 (-0.77, 0.83)	0.30 (-0.68, 1.29)	1.04 (-0.47, 2.56)	0.322
	10~12	Ref	-0.95 (-1.96, 0.05)	0.50 (-0.68, 1.68)	2.39 (0.82, 3.95)**	

Adjusted for gender, paternal and maternal educational level, family income, MSFsc, Nap, MVPA, SB, BMI, weekday sleep duration.

MSFsc: midpoint of sleep on free days corrected for sleep extension on free days. MVPA: moderate to vigorous physical activity. SB: sedentary behavior. BMI: body mass index, kg/m². BRI: Behavioral Regulation Index. MI: Metacognition Index. GEC: Global Executive Composite.

$p < 0.05$ depicted with *. $p < 0.01$ depicted with **.

Table S2 Linear regression of the associations between weekend catch-up sleep and EFs classified by gender.

Executive Function	Gender	No catch-up	0~1 hour	1~2 hours	>2 hours	<i>p</i> _{inter}
n (%)	Boy	713 (28.7%)	1126 (45.3%)	492 (19.8%)	157 (6.3%)	-
	Girl	535 (24.2%)	971 (43.9%)	494 (22.3%)	211 (9.5%)	
Inhibit	Boy	Ref	-0.15 (-0.93, 0.63)	0.66 (-0.30, 1.63)	1.91 (0.42, 3.40)*	0.366
	Girl	Ref	0.02 (-0.74, 0.77)	0.69 (-0.20, 1.58)	0.23 (-0.97, 1.43)	
Shift	Boy	Ref	-0.14 (-0.90, 0.61)	-0.10 (-1.03, 0.83)	2.07 (0.63, 3.52)**	0.677
	Girl	Ref	-0.21 (-1.03, 0.62)	0.01 (-0.96, 0.98)	1.41 (0.10, 2.71)*	
Emotional Control	Boy	Ref	-0.19 (-0.93, 0.55)	0.32 (-0.60, 1.23)	1.34 (-0.08, 2.76)	0.673
	Girl	Ref	-0.05 (-0.81, 0.71)	0.72 (-0.18, 1.61)	1.42 (0.21, 2.62)*	
Initiate	Boy	Ref	0.11 (-0.73, 0.94)	0.33 (-0.69, 1.36)	1.96 (0.37, 3.55)*	0.882
	Girl	Ref	0.32 (-0.68, 1.32)	0.57 (-0.61, 1.75)	1.96 (0.37, 3.55)*	
Working Memory	Boy	Ref	-0.37 (-1.25, 0.51)	0.07 (-1.02, 1.16)	2.07 (0.38, 3.76)*	0.582
	Girl	Ref	-0.23 (-1.21, 0.76)	0.09 (-1.07, 1.25)	0.72 (-0.84, 2.29)	
Plan/Organize	Boy	Ref	-0.67 (-1.63, 0.29)	0.26 (-0.92, 1.45)	2.25 (0.42, 4.09)*	0.499
	Girl	Ref	-0.32 (-1.39, 0.74)	0.61 (-0.65, 1.86)	0.96 (-0.73, 2.66)	
Organization of Materials	Boy	Ref	-0.80 (-1.63, 0.02)	-0.21 (-1.23, 0.81)	1.27 (-0.31, 2.85)	0.884
	Girl	Ref	-0.11 (-0.96, 0.73)	0.03 (-0.97, 1.03)	0.51 (-0.83, 1.86)	
Monitor	Boy	Ref	-0.79 (-1.85, 0.27)	-0.43 (-1.74, 0.88)	2.78 (0.75, 4.81)**	0.750
	Girl	Ref	-0.08 (-1.24, 1.08)	0.78 (-0.59, 2.15)	1.14 (-0.70, 2.99)	
BRI	Boy	Ref	-0.16 (-0.90, 0.58)	0.43 (-0.49, 1.35)	2.05 (0.63, 3.47)**	0.666
	Girl	Ref	-0.05 (-0.80, 0.70)	0.63 (-0.26, 1.52)	1.14 (-0.06, 2.33)	
MI	Boy	Ref	-0.58 (-1.52, 0.35)	0.05 (-1.10, 1.21)	2.54 (0.75, 4.33)**	0.597
	Girl	Ref	-0.10 (-1.13, 0.94)	0.49 (-0.73, 1.70)	1.13 (-0.51, 2.78)	

GEC(BRI+MI)	Boy	Ref	-0.49 (-1.35, 0.38)	0.17 (-0.90, 1.24)	2.50 (0.85, 4.16)**	0.606
	Girl	Ref	-0.12 (-1.03, 0.80)	0.53 (-0.55, 1.60)	1.18 (-0.27, 2.63)	

Adjusted for age, paternal and maternal educational level, family income, MSFsc, Nap, MVPA, SB, BMI, weekday sleep duration.

MSFsc: midpoint of sleep on free days corrected for sleep extension on free days. MVPA: moderate to vigorous physical activity. SB: sedentary behavior. BMI: body mass index, kg/m². BRI: Behavioral Regulation Index. MI: Metacognition Index. GEC: Global Executive Composite.

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