

Supplementary Material

The Relationship Between Cardiovascular Health and Rate of Cognitive Decline in Young-Old and Old-Old Adults: A Population-Based Study

Supplementary Table 1. Estimates from linear mixed models by LS7 tertiles for the total sample (n = 1,620), young-old (n = 1,197), and old-old (n = 423), after excluding those with a history of cardiovascular disease (n = 330). Beta coefficients together with 95 % confidence intervals represent mean baseline performance and rate of decline for the poor group. For the intermediate and optimal group, coefficients represent intercept differences and differences in rate of change compared to the poor group.

		Episodic memory	Semantic memory	Verbal fluency	Perceptual speed	Global cognition
Total sample						
poor	level	-0.13 [-0.22, -0.05]	-0.04 [-0.19, -0.03]	-0.11 [-0.19, -0.03]	-0.18 [-0.26, -0.10]	-0.11 [-0.17, -0.05]
	change	-0.04 [-0.05, -0.03]	-0.03 [-0.04, -0.02]	-0.03 [-0.04, -0.03]	-0.05 [-0.06, -0.05]	-0.04 [-0.05, -0.03]
intermediate	level	-0.05 [-0.15, 0.04]	-0.01 [-0.12, 0.10]	0.05 [-0.03, 0.14]	0.14 [0.05, 0.23]**	0.03 [-0.03, 0.10]
	change	0.01 [0.00, 0.02]	-0.01 [-0.02, 0.00]	0.00 [-0.01, 0.01]	0.00 [-0.01, 0.01]	0.00 [-0.01, 0.01]
optimal	level	-0.01 [-0.11, 0.09]	-0.03 [-0.15, 0.08]	0.08 [-0.01, 0.17]	0.23 [0.14, 0.32]***	0.07 [0.00, 0.13]
	change	0.01 [-0.01, 0.02]	0.01 [0.00, 0.02]	0.00 [-0.01, 0.01]	0.00 [-0.01, 0.01]	0.00 [0.00, 0.01]
Young-old (60-72 y)						
poor	level	-0.12 [-0.21, -0.02]	-0.07 [-0.20, -0.02]	-0.11 [-0.20, -0.02]	-0.21 [-0.30, -0.11]	-0.13 [-0.19, -0.06]
	change	-0.04 [-0.05, -0.03]	-0.02 [-0.03, -0.01]	-0.03 [-0.03, -0.02]	-0.05 [-0.06, -0.05]	-0.04 [-0.04, -0.03]
intermediate	level	-0.07 [-0.18, 0.05]	0.01 [-0.12, 0.14]	0.04 [-0.06, 0.15]	0.20 [0.09, 0.31]***	0.04 [-0.03, 0.12]
	change	0.02 [0.00, 0.03]*	0.00 [-0.01, 0.01]	0.01 [0.00, 0.01]	0.00 [-0.01, 0.01]	0.01 [0.00, 0.01]
optimal	level	-0.07 [-0.18, 0.05]	0.00 [-0.13, 0.14]	0.12 [0.01, 0.23]*	0.28 [0.17, 0.39]***	0.08 [0.01, 0.16]*
	change	0.01 [0.00, 0.03]	0.01 [0.00, 0.02]	0.00 [-0.01, 0.01]	0.00 [-0.01, 0.01]	0.01 [0.00, 0.01]
Old-old (≥78 y)						
poor	level	-0.17 [-0.37, 0.02]	0.03 [-0.26, 0.11]	-0.07 [-0.26, 0.11]	-0.14 [-0.35, 0.07]	-0.09 [-0.23, 0.05]
	change	-0.05 [-0.08, -0.03]	-0.06 [-0.08, -0.03]	-0.07 [-0.09, -0.05]	-0.09 [-0.12, -0.07]	-0.07 [-0.09, -0.05]
intermediate	level	-0.01 [-0.20, 0.18]	-0.08 [-0.29, 0.13]	0.05 [-0.12, 0.23]	0.01 [-0.19, 0.21]	0.00 [-0.13, 0.14]
	change	0.00 [-0.03, 0.04]	-0.02 [-0.05, 0.01]	-0.01 [-0.03, 0.02]	0.00 [-0.04, 0.03]	-0.01 [-0.03, 0.01]
optimal	level	0.15 [-0.05, 0.35]	-0.13 [-0.35, 0.10]	-0.04 [-0.23, 0.15]	0.16 [-0.06, 0.37]	0.04 [-0.10, 0.18]
	change	-0.03 [-0.06, 0.00]	0.00 [-0.03, 0.03]	-0.01 [-0.03, 0.02]	-0.02 [-0.05, 0.01]	-0.02 [-0.04, 0.01]

*p < 0.05, **p < 0.001, ***p < 0.001. Adjusted for sex, age, education.

Supplementary Table 2. Estimates from the linear mixed models by LS7 tertiles for 7 individual metrics for the total sample (n = 1620) after excluding those with a history of cardiovascular disease (n = 330). Beta coefficients together with 95 % confidence intervals represent mean baseline performance and rate of decline for the poor group. For the intermediate and optimal group, coefficients represent intercept differences and differences in rate of change compared to the poor group.

		poor	intermediate	optimal
Smoking				
episodic memory	level	-0.23 [-0.33, -0.12]	-0.07 [-0.26, 0.12]	0.10 [-0.01, 0.20]
	change	-0.04 [-0.06, -0.03]	0.02 [0.00, 0.05]	0.01 [-0.01, 0.02]
semantic memory	level	0.01 [-0.14, 0.07]	0.06 [-0.17, 0.28]	-0.10 [-0.22, 0.03]
	change	-0.02 [-0.03, -0.01]	-0.02 [-0.04, 0.00]	-0.01 [-0.02, 0.00]
verbal fluency	level	-0.04 [-0.14, 0.07]	0.06 [-0.12, 0.24]	-0.04 [-0.14, 0.06]
	change	-0.03 [-0.04, -0.02]	0.00 [-0.02, 0.02]	0.00 [-0.01, 0.01]
perceptual speed	level	-0.27 [-0.37, -0.17]	0.22 [0.05, 0.40]*	0.25 [0.15, 0.35]***
	change	-0.06 [-0.07, -0.05]	0.01 [-0.01, 0.03]	0.00 [-0.01, 0.01]
global cognition	level	-0.12 [-0.20, -0.05]	0.07 [-0.06, 0.20]	0.05 [-0.03, 0.12]
	change	-0.04 [-0.05, -0.03]	0.00 [-0.01, 0.02]	0.00 [-0.01, 0.01]
Diet				
episodic memory	level	-0.17 [-0.26, -0.09]	0.05 [-0.04, 0.14]	-0.06 [-0.19, 0.07]
	change	-0.03 [-0.04, -0.02]	-0.01 [-0.02, 0.01]	-0.01 [-0.02, 0.01]
semantic memory	level	-0.14 [-0.20, -0.04]	0.16 [0.05, 0.26]**	0.04 [-0.12, 0.19]
	change	-0.02 [-0.03, -0.01]	-0.01 [-0.02, 0.00]*	-0.01 [-0.02, 0.01]
verbal fluency	level	-0.12 [-0.20, -0.04]	0.11 [0.02, 0.19]*	0.10 [-0.03, 0.22]
	change	-0.03 [-0.04, -0.02]	0.00 [-0.01, 0.01]	-0.01 [-0.02, 0.00]
perceptual speed	level	-0.10 [-0.18, -0.02]	0.08 [-0.01, 0.16]	0.06 [-0.06, 0.19]
	change	-0.05 [-0.06, -0.04]	-0.01 [-0.02, 0.00]	-0.01 [-0.02, 0.01]
global cognition	level	-0.13 [-0.19, -0.07]	0.09 [0.03, 0.15]**	0.03 [-0.06, 0.11]
	change	-0.03 [-0.04, -0.03]	-0.01 [-0.01, 0.00]	-0.01 [-0.02, 0.00]
Physical activity				
episodic memory	level	-0.18 [-0.28, -0.08]	0.06 [-0.05, 0.17]	0.00 [-0.11, 0.12]
	change	-0.04 [-0.05, -0.02]	0.00 [-0.01, 0.02]	0.01 [-0.01, 0.02]
semantic memory	level	-0.12 [-0.31, -0.12]	0.12 [0.00, 0.25]	-0.02 [-0.15, 0.12]
	change	-0.02 [-0.03, -0.01]	0.00 [-0.02, 0.01]	0.00 [-0.02, 0.01]
verbal fluency	level	-0.21 [-0.31, -0.12]	0.18 [0.09, 0.28]***	0.19 [0.09, 0.30]***
	change	-0.02 [-0.03, -0.02]	-0.01 [-0.02, 0.00]*	0.00 [-0.01, 0.01]
perceptual speed	level	-0.22 [-0.32, -0.13]	0.17 [0.07, 0.27]**	0.26 [0.15, 0.36]***
	change	-0.05 [-0.06, -0.04]	-0.01 [-0.02, 0.00]	0.00 [-0.02, 0.01]
global cognition	level	-0.18 [-0.25, -0.11]	0.13 [0.06, 0.20]***	0.11 [0.03, 0.19]**
	change	-0.03 [-0.04, -0.03]	-0.01 [-0.01, 0.00]	0.00 [-0.01, 0.01]
Body mass index				
episodic memory	level	-0.11 [-0.22, 0.01]	-0.05 [-0.17, 0.07]	-0.06 [-0.18, 0.06]
	change	-0.03 [-0.05, -0.02]	0.00 [-0.02, 0.02]	0.00 [-0.02, 0.01]
semantic memory	level	-0.10 [-0.22, -0.01]	0.06 [-0.08, 0.20]	0.04 [-0.10, 0.17]
	change	-0.03 [-0.04, -0.02]	0.00 [-0.01, 0.01]	0.01 [-0.01, 0.02]
verbal fluency	level	-0.12 [-0.22, -0.01]	0.08 [-0.04, 0.19]	0.05 [-0.06, 0.16]

	change	-0.03 [-0.04, -0.02]	0.00 [-0.01, 0.01]	0.00 [-0.01, 0.01]
perceptual speed	level	-0.15 [-0.26, -0.05]	0.12 [0.01, 0.23]*	0.09 [-0.02, 0.20]
	change	-0.05 [-0.06, -0.04]	0.00 [-0.01, 0.01]	0.00 [-0.02, 0.01]
global cognition	level	-0.12 [-0.20, -0.04]	0.05 [-0.03, 0.13]	0.03 [-0.05, 0.11]
	change	-0.04 [-0.04, -0.03]	0.00 [-0.01, 0.01]	0.00 [-0.01, 0.01]
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Plasma glucose				
episodic memory	level	0.00 [-0.15, 0.16]	-0.18 [-0.35, -0.01]*	-0.17 [-0.33, -0.01]*
	change	-0.04 [-0.06, -0.02]	0.00 [-0.02, 0.03]	0.01 [-0.01, 0.03]
semantic memory	level	-0.03 [-0.29, 0.00]	-0.05 [-0.25, 0.15]	-0.01 [-0.20, 0.17]
	change	-0.04 [-0.06, -0.02]	0.01 [-0.01, 0.02]	0.01 [0.00, 0.03]
verbal fluency	level	-0.14 [-0.29, 0.00]	0.09 [-0.07, 0.25]	0.09 [-0.05, 0.24]
	change	-0.04 [-0.05, -0.03]	0.00 [-0.01, 0.02]	0.01 [0.00, 0.03]
perceptual speed	level	-0.14 [-0.29, 0.00]	0.09 [-0.07, 0.25]	0.09 [-0.05, 0.24]
	change	-0.04 [-0.05, -0.03]	0.00 [-0.01, 0.02]	0.01 [0.00, 0.03]
global cognition	level	-0.07 [-0.18, 0.04]	-0.03 [-0.14, 0.09]	0.00 [-0.11, 0.11]
	change	-0.04 [-0.06, -0.03]	0.00 [-0.01, 0.01]	0.01 [0.00, 0.02]
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Total serum cholesterol				
episodic memory	level	-0.15 [-0.23, -0.07]	0.00 [-0.09, 0.08]	-0.01 [-0.13, 0.12]
	change	-0.03 [-0.04, -0.02]	-0.01 [-0.02, 0.00]	-0.01 [-0.02, 0.01]
semantic memory	level	0.01 [-0.08, 0.06]	-0.14 [-0.24, -0.05]**	-0.04 [-0.18, 0.10]
	change	-0.03 [-0.03, -0.02]	0.00 [-0.01, 0.01]	0.00 [-0.02, 0.01]
verbal fluency	level	-0.01 [-0.08, 0.06]	-0.09 [-0.17, -0.02]*	-0.04 [-0.15, 0.07]
	change	-0.03 [-0.04, -0.03]	0.00 [-0.01, 0.01]	-0.01 [-0.02, 0.00]
perceptual speed	level	-0.05 [-0.13, 0.02]	-0.01 [-0.08, 0.07]	-0.03 [-0.14, 0.09]
	change	-0.05 [-0.06, -0.05]	-0.01 [-0.01, 0.00]	-0.01 [-0.02, 0.00]
global cognition	level	-0.05 [-0.10, 0.01]	-0.06 [-0.12, -0.01]*	-0.03 [-0.11, 0.05]
	change	-0.04 [-0.04, -0.03]	0.00 [-0.01, 0.00]	-0.01 [-0.02, 0.00]
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Blood pressure				
episodic memory	level	-0.14 [-0.21, -0.08]	-0.03 [-0.12, 0.05]	-0.02 [-0.18, 0.13]
	change	-0.04 [-0.04, -0.03]	0.01 [0.00, 0.02]	0.00 [-0.02, 0.02]
semantic memory	level	-0.07 [-0.12, 0.00]	0.04 [-0.06, 0.14]	-0.05 [-0.23, 0.13]
	change	-0.03 [-0.04, -0.03]	0.01 [0.00, 0.02]*	0.01 [0.00, 0.03]
verbal fluency	level	-0.06 [-0.12, 0.00]	-0.01 [-0.09, 0.07]	0.01 [-0.14, 0.16]
	change	-0.03 [-0.04, -0.03]	0.01 [0.00, 0.01]	0.01 [0.00, 0.02]
perceptual speed	level	-0.08 [-0.14, -0.02]	0.06 [-0.02, 0.14]	0.09 [-0.05, 0.24]
	change	-0.06 [-0.06, -0.05]	0.00 [-0.01, 0.01]	0.02 [0.00, 0.03]*
global cognition	level	-0.09 [-0.13, -0.04]	0.02 [-0.04, 0.08]	0.02 [-0.09, 0.12]
	change	-0.04 [-0.04, -0.04]	0.01 [0.00, 0.01]*	0.01 [0.00, 0.02]

*p < 0.05, **p < 0.01, ***p < 0.001. Adjusted for sex, age, education.