SUPPLEMENTARY DATA

Appendix

The jth measurement of the T scores obtained from the ith individual, $i=1\ldots, n_k$, where the n_k is the number of subjects in the analysis of kth factor, $k=1,..,4$, was modeled by a linear mixed effects model:

$$T_{ij} = \alpha + \beta_{0i} + \beta_1 \text{sex}_i + \beta_2 \text{age}_{ij} + \beta_3 \text{city}_i + \beta_4 \text{high}_i + \beta_5 \text{univ}_i + \beta_6 \text{dose}_i + \varepsilon_{ij}$$

where α is population averaged intercept, β_{0i} depends on the participants and is distributed according to an identical normal distribution with the same variance across individuals, $\beta_1, \ldots, \beta_6$ are population averaged values of associations between each covariate and T score, sex_i, city_i, high_i, and univ_i are indicators that take 1 when sex is male, city is Nagasaki, education is high school, and education is university and take 0 otherwise, respectively, and ε_{ij} is the residual, or a random error.

The generalized linear mixed effects model for the probability that participants were "impaired" at the time of the jth NCQ test is expressed as

$$\frac{1}{1+\exp\left(-\alpha-\beta_{0i}-\beta_1 \text{sex}_i-\beta_2 \text{age}_{ij}-\beta_3 \text{city}_i-\beta_4 \text{high}_i-\beta_5 \text{univ}_i-\beta_6 \text{dose}_i\right)}.$$

We specified a non-informative prior distribution for $\alpha, \beta_1, \cdots, \beta_6$ (i.e. N (0, 100^2)). Prior distributions of β_{0i} and ε_{ij} are normal distributions whose mean (SD) are 0 (σ_β) and 0 (σ_ε) respectively, where prior distributions of σ_β and σ_ε are half-Cauchy distributions.

Supplementary TABLE S1

The List of NCQ Items for the Four Factors

	NCQ No.	NCQ Items
Factor 1	5	Forgets instructions easily
Metacognition	10	Different ways to solve a problem
	13	Forgot what doing in middle of things
	17	Trouble with multitasking
	20	Trouble remembering things
	21	Trouble prioritizing activities
	22	Reads slowly
	24	Trouble solving math problems
	25	Does not work well under pressure
Factor 2	1	Gets upset easily
Emotional regulation	8	Gets frustrated easily
	9	Mood changes frequently
	11	Impulsive
	16	Easily overwhelmed
Factor 3	4	Disorganized
Motivation/Organization	6	Problems completing my work
	12	Trouble finding things in bedroom
	14	Problems with self-motivation
Factor 4	2	Takes longer to complete work
Processing speed	23	Slower than others

The four factors were identified by Yamada (*1*) and NCQ items were described by Krull (*2*).

1   Yamada M, Landes RD, Hida A, Ishihara K, Krull KR. Effects of Demographic Variables on Subjective Neurocognitive Complaints Using the Neurocognitive Questionnaire (NCQ) in an Aged Japanese Population. Int J Environ Res Public Health 2019; 16:421.

2   Krull KR, Gioia G, Ness KK, Ellenberg L, Recklitis C, Leisenring W, et al. Reliability and validity of the Childhood Cancer Survivor Study Neurocognitive Questionnaire. Cancer 2008; 113:2188-97.