No Evidence was Found for the Influence of Genetic Effects on Sleep Duration in the Japanese Population

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Background:

Sleep duration in Japan is one of the shortest worldwide. Additionally, in other East Asian countries (South Korea and China including Hong Kong), sleep duration is shorter than in European countries. Sleep duration in Japan has also decreased after the high economic growth period of the 1960s. It is still not known in which extent genetic and environmental factors affect sleep duration in the Japanese population.

Results:

The within-pair correlations were largely similar in both zygosity groups (table1).
In the genetic twin modeling, the common environment/ unique environment (CE) model showed the best fit according to the AIC fit index (table2).

Table2: Univariate Analysis

	Variance compornents (95% Cis)		
	A*	C	E
sleep duration (weekday)	0	0.44 (0.35-0.52)	0.56 (0.48-0.65)
sleep duration (weekend)	0	0.44 (0.35-0.51)	0.56 (0.49-0.65)

*A compornent was fixed to zero.

Table1: Sample characteristics and within-pair correlations

		N(pairs)	M	SD	ICC
MZ					
	age	319	54.3	18.8	–
	sleep duration (weekday)	319	7.2	1.3	0.40
	sleep duration (weekend)	319	7.9	1.4	0.41
DZ					
	age	69	53.2	21.9	–
	sleep duration (weekday)	69	7.1	1.3	0.44
	sleep duration (weekend)	69	8.1	1.6	0.48

Discussion: What is the "common environment" in Japan?

Long commuting time? Long working hours?

Tea or Coffee? Perhaps energy drink?

Dose everyone have a similar lifestyle from childhood?

Is Japanese society getting more standardisation?

2010 1986

Nikkei (evening) 16. SEP. 2010. print

"Sleep four hours and pass, five ours and fail!" –For the university entrance exam.
"Can you fight for twenty-four hours?" –A sales copy of an energy drink at the 1990s.

Conclusions:

No evidence was found for the influence of genetic effects on sleep duration in the Japanese population. Instead, common environmental factors explained 44% of the variation of sleep duration.

Method:

Study participants were derived from the Osaka University Twin Registry. The sleep duration data were collected by questionnaires sent to 697 twin pairs in 2014 and 750 pairs in 2016. After excluding clearly erroneous values (N=221), we had 319 monozygotic and 69 dizygotic complete twin pairs. The data were analyzed using univariate genetic twin modelling after adjusting the analyses for age and sex effects.

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