

Validation of the French Version of Children's Chronotype Questionnaire in school-aged children: a study in Luxembourgish population.

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Objectives

Human behaviour differences are determined by factors such as the circadian phase preference. Adults have been well examined concerning performance variation during the work schedules depending on chronotype. However there is a serious gap on research with children respecting the evaluation and understanding of their sleep patterns, specifically referring the chronotype variability. The main goal was to validate the Children's Chronotype Questionnaire (CCTQ, Werner, LeBourgeois, Geiger et al., 2009) for French language and to identify and to determine chronotype and specific sleep habits differences of young children of Luxembourgish schools, according to age and regarding different school schedules.

Methods

After completing the full procedure for the adaptation of the CCTQ to the French Language, the instrument was administrated, during a two month-period, to the parents of 173 children, aged between four and 11 years old, in Luxembourg. The CCTQ measures the sleep and wake behaviours in three specific levels/scales with a total of 27 items: midsleep phase (duration of sleep time) for free days and school days (1), morningness and eveningness (M/E) (2), and chronotype (3).

	Valid	Chronotype	Chronotype
		4-7 yr	8-11 yr
N		64	108
Mean		23,97	25,83
S. Deviation		4,998	4,314
Variance		24,983	18,607
Curtoisic		-,493	-,152
Percentiles	10	18,00	20,00
	25	20,00	23,00
	50	24,00	26,00
	75	28,00	28,00
	90	30,00	33,00



Results

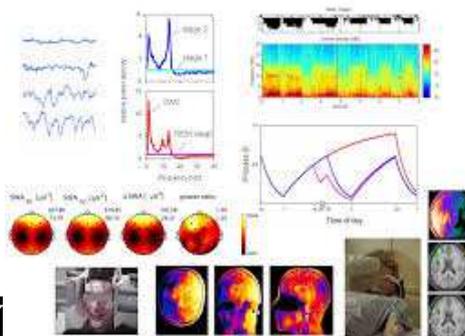
The CCTQ presented good internal consistency (α .70) but lower compared to the original version (α .81) which probably is explained for the cultural diversity of the sample (variability of the sleep habits among natives and immigrant children). The correlation was positively moderated to high between the three scales of the CCTQ (highest coefficient: $r = .91$). Children showed different punctuations considering the M/E (58 morning type, 66 evening type, the other subjects were identified as intermediate type) being that the morning type demonstrated lower midsleep phase (a difference of 23 minutes) with statistical significance compared to the evening type subjects ($n = 173$, $p = .017$, $\eta^2 .06$). Their sleep habits significantly differ ($p < .05$) regarding awake and sleep behaviors and schedule preferences considering age ($p = .000$, $\eta^2 .83$) - mostly between four and 10 yr old - and considering school timetables ($p = .009$, $\eta^2 .136$) - mostly between children attending to the full day school timetable (that includes classes during both morning and afternoon, differently from the other two timetables: only morning or only afternoon).

Conclusions

This study presents the first validated French version of the CCTQ. The variability observed among the children's groups concerning the M/E and the associated preferences for performance may explain academic achievement scores that are moderated by age and by different school timetables that children currently attend at schools in Luxembourg. Chronotype of school-aged children should be strongly considered by valid measures such as the CCTQ to understand how to implement more adequate timetables for testing in specific academic areas.

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