

ORIGINAL ARTICLES

Sleep Duration in Italian Children: Parental Control on Bedtime as Explaining Factor

Maria José Esposito¹, Ph.D., Augusto Gnisci², Ph.D., Marco Fabbri², Ph.D.,
and PierCarla Cicogna¹, Ph.D.

Objective: This study assessed the relationship among sleep habits and sleep-wake quality of Italian school-aged children and specific environmental factors (co-sleeping, weekly workload, parental control on bedtime). We also collected data about the awareness of the importance of sleep in school-aged children, as well as how often children have the opportunity to talk about sleep habits with their parents.

Method: The Life Rhythms and Sleep Habits questionnaire was administered to 776 school aged children.

Results: Results indicated that, except Sleep Latency, all sleep indexes considered change from school nights to weekends, when time devoted to sleep increases ($p < 0.0001$); younger children sleep more than older ones on school nights ($p < 0.05$), older children have a later bedtime on both school nights and weekends ($p < 0.01$; $p < 0.05$); children sharing a bedroom sleep more and go to bed earlier than children who do not share a room ($p < 0.05$; $p < 0.05$). The 53.7% of children assessed sleep as very important, but the 47.8% of them reported to never, or seldom, talk about sleep habits with their parents. Log-linear analyses were applied to assess the relations among weekly workload, parental control of bedtime, bedtime and sleep-wake quality variables. Children with a more structured time schedule (greater parental control at bedtime, earlier bedtime, higher weekly workload) reported a better sleep quality (lower sleep onset latency, no nocturnal awakenings), although they reported more diurnal sleepiness.

Conclusions: The short sleep duration of Italian school-aged children is largely explained by parent-style, parents leave too much autonomy to their children in deciding when to go to bed. (**Sleep and Hypnosis 2014;16(1-2):1-9**)

Key words: Sleep education, pediatrics, sleep hygiene, bedtime; children, sleep duration

INTRODUCTION

A good quality and quantity of night sleep is a substantial factor in allowing the adequate

¹Department of Psychology, Alma Mater Studiorum, University of Bologna

²Department of Psychology, Second University of Naples

Address reprint requests to: Maria José Esposito, Ph.D.
Department of Psychology, University of Bologna,
Viale Berti Pichat 5, 40127, Bologna, Italy;
Tel: +39-051-2091820, Fax: +39-051-243086;
E-mail: mariajose.esposito2@unibo.it

Accepted March 13, 2014

daytime functioning of human beings. Life styles of industrialized countries have been changed from last decades, and sleep-wake patterns have been adapted to new needs and society demands. Sleep duration has decreased, daytime sleepiness has increased and complaints about the poor quality of sleep are frequent, for adults, young, and children (1–4).

Recent studies showed that quantity and quality of sleep in school-aged-children may depend on many factors as everyday activities

(e.g. scholar schedules, extra-scholar activities), sleep habits (e.g. bedtime, rising time, co-sleeping), and parenting practices (5,6). Furthermore the poor quality of sleep has been associated with many problems in everyday life as school outcomes (e.g. inattentive behavior)(7,8), excessive sleepiness (9-11), and onset of insomnia (12). A recent meta-analysis confirmed a clear relationship between sleep curtailment and deficits in high-order cognitive functions, as well as behavioural problems increasing in school-age children (13).

For many industrialized countries the modification of sleep-wake schedules in children is yet partially documented. Nevertheless the concern about quantity and quality of sleep in children is growing up among researchers (14,15). Developing the awareness of the importance of sleep, as well as developing good sleep habits during primary school period, it is a crucial goal for sleep practitioners. This would help children to learn, and consolidate, a good sleep hygiene, which would prevent from the establishment of unhealthy sleep habits in adolescence and adulthood (16). In this regards it would be necessary to work on knowledge about the importance of sleep among the caregivers, the pediatricians, and the teachers. Some sleep education programs would benefit children and adults.

A recent survey has shown that Italian school-children present shorter sleep duration in comparison with other European children, and this phenomenon has been attributed to a late bedtime (5). This habit in Italian population is encouraged by flexible and unstructured sleep schedules (5). In this regard has been suggested that scarce parenting control of sleep schedules, and hence the children autonomy in deciding the bedtime, could be the major explaining factor (17).

We present an investigation on sleep quantity and quality referring also to the life habits in a sample of Italian schoolchildren (aged 9-11 y.o.), living in urban areas.

Our study was focused on four major points

- a) quantitative analysis of sleep-wake patterns in school-days and weekend days.

- b) quantitative analysis of environmental factors potentially affecting sleep-wake patterns and sleep quality, in particular co-sleeping.

- c) assessment of the relationship among children weekly workload, children autonomy in deciding bedtime (i.e. parental control), bedtime, and diurnal sleepiness, nocturnal awakenings, sleep onset latency.

- d) assessment of the awareness of the importance of sleep in children

METHOD

Participants

776 school-aged children between 9 to 11 years (mean age 9.8 ± 0.74 y.o.), 408 boys and 368 girls, recruited from fourth and fifth grade of ten primary schools, in five different urban areas of Italy.

The purpose of the study was presented in each school, indicating that the aim was the evaluation of children sleep habits. This study was approved by the local Ethics Committee, and informed consent was obtained from parents and headmaster in each school.

All participants have to fill in a questionnaire individually in their classroom. The questionnaires, and the instructions on the answer format, were presented in each classroom by the teacher.

In order to making uniform the children condition in terms of scholastic engagement, tiredness and fatigue, data were collected in the same season of the same year, during the month of May.

Instruments

A modified version of the Life Rhythms and Sleep Habits Questionnaire (18) has been used in order to collect following information: scholar and extra-scholar schedules, sleep habits during school-days and weekend days,

life rhythms, and sleep quality. The questionnaire includes 35 items with both open and closed answers.

Usually the data about children sleep-wake patterns are collected by questionnaires filled in by parents. However some studies showed a good correlation between objective and subjective sleep measures in children (19,20), suggesting that the self evaluation can be applied to surveys for sleep habits screening in childhood. Because our interest was overall focused on self perception of sleep-wake habits, we chose to administer the questionnaire to children.

Sleep-wake patterns

Bedtime (BT), Wake-Up Time (WT), Sleep Onset Latency (SOL), Wakefulness After Sleep Onset (WASO), were surveyed by specific questions referring school-days and weekend days. From these data we have calculated the Time in Bed (TIB: time elapsed from BT to WT), the Total Sleep Time (TST: TIB minus SOL and WASO), the Sleep Efficiency Index (SEI: $TST/TIB \times 100$).

Environmental Factors

Information about scholar schedules and extra-scholar activities have been considered for calculating the workload index. High workload identifies children who spend 35–40 hours per week at school, and are also engaged in some extra-scholar activities. Low workload instead refers to the children attending only school for 35–40 hours per week, but do not reporting extra-scholar activities.

In this section we have also considered the co-sleeping, specifically if children sleep alone, or they share a room or the bed.

A specific question of the questionnaire was devoted to investigate children autonomy in managing their bedtime, and so parental control on Bedtime. More autonomy in managing bedtime by children meant a less parental control.

Sleep-wake Quality

To evaluate the sleep-wake quality we have considered Sleep Onset Latency, Night awakenings, and Diurnal tiredness/sleepiness at school. In order to distinguish between good and bad SOL we have considered the standard time window of 30 minutes. The frequency of night awakenings has been evaluated by making a distinction between children who reported more than one awakening per night, and children who reported none or only one awakening.

The criteria to distinguish between high and low diurnal sleepiness has been the feeling of tiredness everyday or very often, rather than never or seldom during the school time.

Awareness of the importance of sleep in children

A specific question of the questionnaire asked children how much in their opinion was important to sleep. To answer children could choice between a four point scale from “Really not Important” to “Very Important”.

Another question investigated how often children used to talk about their sleep habits with parents. In this latter case children could answer by a five point scale from “Never” to “Very often”.

Data Analyses

Data about sleep-wake patterns for both school-days and weekend days were submitted to descriptive statistics. Non parametric statistic tests (i.e. Wilcoxon, Z) have been applied since variables were not normally distributed. The effects of age and co-sleeping have been evaluated by applying the Kruskal-Wallis (chi-square) and the Mann-Whitney (U) statistics, respectively.

The distribution of the frequency answers regarding the awareness of the sleep importance and the frequency by which children used to talk about their sleep habits with parents, as

well as the relationship between these two variables, were analyzed by the Chi-square test.

Log-linear analyses were applied in order to identify the effects of weekly workload, parental control, and bedtime on children sleep and wake quality in school-days. For each dimension considered (i.e., W: Workload; A: Autonomy-Parenting Control on bedtime; B: Bed Time; S: Diurnal tiredness-sleepiness; L: Sleep Onset Latency; N: Nocturnal Awakenings), we arranged a dummy variable, according to criteria described in Sleep Quality method's section. About the Parenting control on bedtime, the values of children autonomy in deciding bedtime were already collected by a dummy variable (yes vs. no). The upper quartile of bedtime distribution in school-days (i.e. 22:08) has been assumed as cut-off for distinguishing between late and early-normal BT. Children reporting to go in bed after or at 22:10 have been clustered as Later BT, while children who reported a bedtime before 22:10 were classified Early-Normal BT.

Statistical analyses were performed by IBM® SPSS® Statistic 21.0, and ILOG 3.0 (21).

RESULTS

Children sometimes did not answer some questions. For this reason results do not reflect always the exact N of whole sample investigated (N=776). Missing data were not replaced by others values and the entire case of missing data were excluded from analyses about the variable investigated. Response rate was always upper 0.96.

Descriptive and Non-Parametric statistics

Sleep-wake patterns reported by children for school-days and week-end days are depicted in Table 1.

TIB, BT, TST, WASO, and WT shown a general increase from school to weekend days (for each test performed, Z value reached a $p < 0.0001$). SOL did not show changes, while SEI decreased during weekend days ($Z = -5.67$, $p < 0.0001$).

As regards the Age factor, analyses shown that children of 9 y.o., the younger ones, spend more TIB (Chi-square=10.85, $df=2$, $p < 0.005$) and show an higher TST (Chi-square=10.61, $df=2$, $p < 0.005$), during the school-days respect older children (e.g. >10 y.o.). These latter, compared with younger ones, show instead a later BT in both conditions (school-days: Chi-square=10.27, $df=2$, $p < 0.01$; weekend days: Chi-square=9.15, $df=2$, $p < 0.05$).

In our sample none child reported to share the bed, and so co-sleeping refers only to room-sharing. Co-sleeping shown an effect on TIB, BT and TST. Children sharing the bedroom with his/her sibling (N=238) reported higher TIB on school-days ($U=54241,500$, $p < 0.05$), an earlier BT in school and weekend days (Respectively: $U=55584,000$, $p < 0.05$; $U=55714,000$, $p < 0.05$), as well as an higher TST during school-days ($U=55520,000$, $p < 0.05$), respect children who sleep alone (N=527).

In relation to the awareness of the importance of sleep, answers were significantly different from the expected ones (Chi-square=383.22, $df=3$, $p < 0.0001$). The children reported to assess sleep "very important" in the 53.7% of cases, "important" in the 24.9%, "not so important" in the 13.4%, and "Really Not Important" in the 8.0% of cases. The frequency about children reported how often they used to talk about sleep habits with their parent gave also significant results (Chi-square=69.87, $df=4$, $p < 0.0001$). The 28.0% of children reported to "Never" talk about sleep habits with their parents, the 19.8% answered "Seldom", the 25.5% answered "Sometimes", the 13.2% answered "Often", and the 13.5% of children reported to talk about sleep habits with their parents "Very Often". The awareness of the sleep importance of sleep was not related to frequency by which children used to talk about sleep habits with their parents.

Log-linear analyses

Data were submitted to three hierarchical log-linear analyses, each one devoted to test the

Table 1. Sleep-wake patterns in school-days and weekends reported by children

Sleep indexes	Age	School days (Mean±SD)	Weekend days (Mean±SD)	p
TIB	9	9:20±59’*	10:11±01:43	<0.0001
	10	9:17±55’	10:12±01:41	<0.0001
	11	9:00±01:07*	10:01±01:53	<0.0001
	All	9:15±59’	10:10±01:40	<0.0001
	p	<0.05	ns	
BT	9	21:59±56’*	23:05±01:10*	<0.0001
	10	21:58±50’	23:08±01:10	<0.0001
	11	22:11±56’*	23:26±01:22*	<0.0001
	All	22:02±53’	23:11±01:13	<0.0001
	p	<0.01	<0.05	
SOL	9	00:20±22’	00:17±20’	ns
	10	00:19±20’	00:19±20’	ns
	11	00:21±22’	00:22±23’	ns
	All	00:20±21’	00:19±21’	ns
	p	ns	ns	
TST	9	08:52±1:10*	09:37±01:55	<0.0001
	10	08:52±1:03	09:35±01:45	<0.0001
	11	08:31±1:16*	09:37±01:44	<0.0001
	All	08:47±1:08	09:34±01:44	<0.0001
	p	<0.05	ns	
WASO	9	00:08±9’	00:17±20’	<0.0001
	10	00:07±8’	00:17±18’	<0.0001
	11	00:08±8’	00:16±18’	<0.0001
	All	00:07±8’	00:16±18’	<0.0001
	p	ns	ns	
WT	9	07:20±28’	09:16±01:26	<0.0001
	10	07:16±31’	09:20±01:33	<0.0001
	11	07:16±31’	09:28±01:34	<0.0001
	All	07:17±30’	09:20±01:31	<0.0001
	p	ns	ns	
SEI(%)	9	94.75±5.41	94.31±2.25	<0.0001
	10	95.13±4.36	93.84±5.66	<0.0001
	11	94.27±5.19	93.18±8.57	<0.0001
	All	94.84±4.89	93.86±6.23	<0.0001
	p	ns	ns	

TIB, Time in Bed; BT, Bedtime; SOL, Sleep Onset Latency; TST, Total Sleep Time; WASO, Wakefulness After Sleep Onset; WT, Wake-up Time; SEI, Sleep Efficiency Index. Data refer to 776 children of 9 y.o. (N=247), 10 y.o. (N=376), 11(N=153).

*Significant differences in relation to age factor

effect of factors of interest (W: Weekly Workload; A: Autonomy–Parenting Control on bedtime; B: Bed Time) on each school–days sleep–wake quality dependent variable (S: Diurnal Sleepiness; N: Nocturnal Awakenings; L: Sleep

Onset Latency).

We first tested all the hierarchical models involving the variables W, A, B and S (N=763). The [WA][WS][AB] resulted the best fitting model ($G^2(8)=7.20$, $p=0.52$, $Q^2=0.90$;

subordinated model: $G^2(9)=52.40$, $p<0.01$ ($Q^2=0.26$). The [WA][WS][AB] has been chosen because it is the simplest non-significant model notwithstanding it explains the 90% of the variability. The effects included in the model are associated to significant and substantial increments ([WA]: $\Delta G^2(1)=45.20$, $p<0.01$, $\Delta Q^2=0.64$; [WS]: $\Delta G^2(1)=7.75$, $p<0.05$, $\Delta Q^2=0.11$; [AB]: $\Delta G^2(1)=10.95$, $p<0.01$, $\Delta Q^2=0.15$). The adjusted residual analyses of the three effects revealed that children with an high Weekly workload have a low Autonomy ($z=6.67$, $p<0.01$), children with a low Autonomy have an early Bed Time ($z=3.30$, $p<0.01$), while a high Weekly workload is positively associated with Diurnal Sleepiness ($z=2.76$, $p<0.05$). In other words a high Weekly workload is associated to a higher Parental Control on Bedtime, and these latter children go to bed earlier respect their contemporaries. Even though a high Weekly workload is associated to the presence of tiredness and sleepiness on daytime, this relationship is not mediated by Parenting control and Bedtime in our data.

The analysis of the hierarchical models involving the variables W, A, B and N ($N=759$) suggests that the number of nocturnal awakenings is not strongly associated to factors of interest tested in the model. The best fitting model is [WA][WN][AB][BN], since is the simplest non significant model in the hierarchical analysis explaining 95% of variability ($Q^2=0.95$) ([WA][WN][AB][BN]: $G^2(7)=3.16$, $p=0.87$, $Q^2=0.95$; subordinated model [WN][AB][BN]: $G^2(8)=47.85$, $p<0.01$ $Q^2=0.27$). The effects WA and AB have been analysed previously. WN and BN effects provides a significant and a tendency increase ([WN]: $\Delta G^2(1)=3.64$, $p=0.05$, $\Delta Q^2=0.06$; [BN]: $\Delta G^2(1)=3.20$, $p=0.07$, $\Delta Q^2=0.05$). The adjusted residual analyses, suggest a smaller Nocturnal awakenings in association with a high Weekly workload ($z=1.89$, $p=0.06$), as wells as a smaller Nocturnal awakenings in association with an early Bed Time ($z=1.80$, $p=0.07$).

As regards the effects of tested factors on Sleep Onset Latency (L) ($N=761$), the best

fitting model resulted [WA][AB][BL], which explains the 91% of variability ([WA][AB][BL]: $G^2(8)=6.34$, $p=0.61$, $Q^2=0.91$; subordinated model [AB][BL][W]: $G^2(9)=49.70$, $p<0.01$ $Q^2=0.30$). Again we do not analyse the known effect WA and AB. BL effect ($\Delta G^2=10.17$, $p<0.01$; $\Delta Q^2=0.14$) shows how children which go to bed earlier report more frequently a Sleep Onset Latency lower than 30 minutes ($z=3.24$, $p<0.01$).

DISCUSSION

This study was devoted to evaluate the relationship among sleep habits and sleep-wake quality of Italian school-aged children and specific environmental factors as co-sleeping, weekly workload, parental control on bedtime. We were also interested to collect data about the awareness of the importance of sleep in school-aged children, as well as how often children have the opportunity to talk about sleep habits with their parents.

Our data confirm results reported by others respect to sleep-wake patterns of Italian school-aged children (5,17), the sleep duration of our children is shorter respect that one of their contemporaries of other industrialized countries. As recently reported (5) Italian and Estonian school aged children show a lower sleep duration compared to the sleep duration of Belgian, Cypriot, German, Hungarian, Spanish and Sweden ones In Flemish (11) population children of the same age sleep one hour more than children in our sample on school-days, and around thirty-five minutes on weekend days. This result support the employ of a self administered questionnaire to assess sleep quality on school-aged children, since our data mimic results obtained by other children sleep quality instruments of assessment (e.g. questionnaires filled by parents).

Children reported go to bed around 22:00 in week days, and around 23:00 on weekend days, more or less a couple of hours later respect to their European contemporaries. This late on Bed Time affects the Time in Bed as well as the

Total Sleep Time. In comparison with data reported in literature about children of other countries (5,11), Italian school-aged children post-pone Bed Time, but show a similar Wake-up Time, in this way their Time in Bed and Total Sleep Time result minor.

In our sample sleep pattern shows some typical changes from school to weekend days. Children tend to increase sleep on days when they are free from school and extra-activities. This result is given by the increase of Wake After Sleep Onset on weekend days, most likely produced by the increase of time from wake-up and getting up on free-school mornings. This habit seems to affect negatively Sleep Efficiency Index, which shows a small decrease during weekend days. However it is worth report that Sleep Efficiency Index values show always a mean level up of 92%. In addition, Sleep Onset Latency which remains stable across the two conditions, suggest that these changes do not impair strongly weekend sleep quality.

As elsewhere suggested and reported, also in our results is evident the Age effect. As soon as age increases sleep duration decreases. TST decreases in older children as effect of a later BT.

It is interesting to note the effect of co-sleeping in our data. Children reporting to share the bedroom also reported on week days a higher TIB, TST and an earlier BT. These results suggest a positive effect of co-sleeping in sleep duration. It could be speculated that only sons spend more evening-night time with parents, and tend to post-pone BT respect children that have a sibling. The only sons would have a major autonomy in deciding their bed time, but this speculative hypothesis needs further empirical evidence.

In our knowledge is the first time children were asked to report their opinion about the importance of sleep. It would appear an encouraging result that the 53.7% and the 24.9% of our sample rated sleep Very Important” or “Important”, respectively. Nevertheless this high percentage could be a bias given by the questionnaire itself, since children would be

affected in their answers because the questionnaire was mainly focused on sleep habits. What we rather find interesting it is the very high percentage of children who reported to “Never” or “Seldom” talk with parents about sleep habits, percentage that in whole reaches the 47.8%. This latter result suggests that in many Italian families the time devoted to talk about sleep is low, and this might reflect a poor knowledge about the importance of sleep in adulthood, and its consequent negative effect of sleep duration in Italian children. According to data reported by others (5,11,13,17) and data presented in the present study, Italian school-aged children sleep around 2 hours less respect suggested amount (22).

As regards the relationship between children weekly workload, children autonomy in deciding bedtime, bedtime, sleep onset latency, nocturnal awakenings, and diurnal sleepiness-tiredness, log-linear analyses suggest that: children with a earlier bedtime, also present a low autonomy in deciding bedtime, and a higher weekly workload, associated with a lower sleep onset latency, fewer nocturnal awakenings, but a higher sleepiness at school. Children which report a more structuralized time-schedule (i.e. Low Autonomy for bedtime, earlier bedtime, extra-scholar activities) seems to have a better sleep quality (i.e. sleep onset latency, nocturnal awakenings), even though they report more frequently to feel tired at school. This point would be further investigated in order to assess the effect of a excessive extra-scholar activities on diurnal tiredness.

Nevertheless our results clearly support the hypothesis suggested by others (5,17) that is the shorter sleep duration of Italian children is largely explained by parent-style. Parents often leave their children deciding by them-selves what time is the good time to go bed. This maybe because parents like to spend evening-night time with their sons, especially only sons, in order to recover the day time they cannot spend with them since job and school demands. In our opinion this habit is quit dangerous. Developing a bad sleep-hygiene since childhood

would later be a base for sleep complaints or problems, especially during adolescence when sleep–wake pattern will be furthermore modified, and would be disrupted by hormonal changes.

The present study documents again the short sleep duration of Italian school–aged children, and describes that this phenomenon is largely explained by parent–style, parents leave to much autonomy to their children in deciding when go to bed. As already claimed (23), Italians parents are not so much concerned about sleep habits of their children, and this is supported by the high percentage by which children reported to never, or seldom, talk about sleep habits with their parents in present study. It is important to advocate the attention of Paediatrics and Family Doctors on this issue, in order to develop a better knowledge about the importance of sleep, as well as “good–sleep

rules” (i.e. sleep hygiene) among parents, and to increase the awareness about their responsibility about sleep–wake quality of children, and the effects that sleep has on the whole psycho–physical well–being.

Disclosure

Authors declare no conflict of interest and a complete financial disclosure about the present study.

Acknowledgments

Authors are grateful to Ignazio Di Natale and Catia Lospinuso for collection and inputting data. Authors are also grateful to all schools headmasters for giving their support in data collection.

REFERENCES

1. Hublin C, Kaprio J, Partinen M, Koskenvuo M. Insufficient sleep: a population-based study in adults. *Sleep* 2001; 24: 392–400.
2. Fallone G., Owens J.A., Deane J. Sleepiness in children and adolescents: clinical implications. *Sleep Med Rev* 2002; 6: 287–306.
3. Fricke-Oerkermann L., Plüch J., Schredl M., Heinz K., Mitschke A., Wiater A., Lehmkühl G. Prevalence and course of sleep problems in childhood. *Sleep* 2007; 30: 1371–77.
4. Iglowstein I., Jenni O.G., Molinari L., Largo R.H. Sleep duration from infancy to adolescence: reference values and generational trends. *Pediatrics* 2003; 111: 302–07.
5. Hence S., Barba G., Pohlabein H., et al. Factors that influence weekday sleep duration in European children. *Sleep* 2011; 34: 633–39.
6. Nixon GM, Thompson JM, Han DY, et al. Short sleep duration in middle childhood: risk factors and consequences. *Sleep* 2008;31:71–8.
7. Meijer A.M., Habekothé H.T., Van Den Wittenboer G.L. Time in bed, quality of sleep and school functioning of children. *J Sleep Res* 2000; 9:145–153.
8. Touchette E., Mongrain V., Petit D., Tremblay R.E., Montplaisir J.Y. Development of Sleep-Wake schedules during childhood and relationship with sleep duration. *Arch Pediatr Adolesc Med* 2008; 162: 343–49.
9. Drake C., Nickel C., Burduvali E., Roth T., Jefferson C, Badia P. The pediatric daytime sleepiness scale (PDSS): Sleep habits and school outcomes in middle-school children. *Sleep* 2003; 26: 455–58.
10. Gaina A., Sekine M., Hamanishi S., Chen X., Wang H, Yamagami T., Kagamimori S. Daytime sleepiness and associated factors in Japanese school children. *T J of Pediat* 2007; 151: 518–22.
11. Spruyt K, O’Brien L.M., Cluydts R., Verleye G.B., Ferri R. Odds, prevalence and predictors of sleep problems in school-age normal children. *J Sleep Res* 2005; 14: 163–176.
12. Nevéus T., Cnattingius S., Olsson U., Hetta J. Sleep habits and slepp problems among a community sample of schoolchildren. *Acta Paediatr* 2001; 90: 1450–51.
13. Astill R.G., Van der Heijden K.B., Van IJzendoorn M.H., Van Someren E.J.W. Sleep, cognition, and behavioral problems in school-age children: a centurt of research meta-analyzed. *Psychol Bull* 2012; 138: 1109–38.
14. Bruni O. The importance of sleep for children’s well being. *Sleep Med* 2010; 11, 599–600.
15. Mindell J.A., Owens J., Alves R., Bruni O., Goh D.Y.T., Hiscock H., Kohyama J. Sadeh A. Give children and adolescents the gift of a good night’s sleep: A call to action. *Sleep Med* 2001; 12, 203–204.

16. Gruber R. *Making Room for Sleep: The Relevance of Sleep to Psychology and the Rationale for Development of Preventative Sleep Education Programs for Children and Adolescents in the Community.* *Canadian Psychol* 2013; 54, 62-71.
17. Giannotti F., Cortesi F., Sebastiani T., Vagnoni C. *Sleeping habits in Italian children and adolescents.* *Sleep Biol Rhythms* 2005; 3: 15-21.
18. Shynomiya H., Takeuchi H., Martoni M., Natale V., Harada T. *Comparative study on circadian typology of Japanese and Italian students aged 12-18 years.* *Sleep Biol Rhythms* 2004; 2, 93-5.
19. Gruber R., Sadeh A., Raviv A. *Sleep of school-age children: objective and subjective measures.* *Sleep Res* 1997; 26:158.
20. Gaina A., Sekine M., Chen X., Hamanishi S., Kagamimori, S. *Validity of child sleep diary questionnaire among junior high-school children.* *J Epidemiol* 2004; 14:1-4.
21. Bakeman R., Robinson B.F., Gnisci A. *Interactive Log-Linear Analysis and Contingency Table Manipulation with ILOG 3.0.* <http://www.gsu.edu/~psyrab/BakemanPrograms.htm>; 2010.
22. Meltzer L.J., Mindell J.A. *Sleep and Sleep Disorders in Children and Adolescents.* *Psychiatr Clin N Am* 2006; 29, 1059-1076.
23. Jenni, O.G., O'Connor B.B. *Children's Sleep: an interplay between culture and biology.* *Pediatrics* 2005; 115 (Suppl 1): 204-16.