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**SLEEP 2009**  
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Associated Professional Sleep Societies, LLC

Seattle, Washington

Scientific Highlights/Abstracts of Original Investigations



This abstract supplement unites *SLEEP* and the science of the SLEEP 2009 23<sup>rd</sup> Annual Meeting of the Associated Professional Sleep Societies, LLC (APSS) in a convenient format. All abstracts presented at SLEEP 2009 held June 6-11, 2009, in Seattle, Washington are included in this special issue.

The abstract supplement provides all Sleep Research Society and American Academy of Sleep Medicine members, including those unable to attend the meeting, a glimpse into the new ideas and latest research taking place in the field of sleep.

This year, there was a 12 percent increase in the number of abstracts submitted for SLEEP 2009; a record number – 1,307 – abstracts will be presented at the meeting. 148 will be presented in an oral presentation format, and the remainder will be presented in a poster format. Similar to prior meetings, the Program Committee elected to:

- 1) Group posters into thematic groups.
- 2) Display each poster on one of the three scheduled poster days (June 8, 9 and 10).

The poster sessions will continue to be two hours in length to allow attendees greater opportunity to view posters and interact with presenters. Each poster has a unique four-digit number and is assigned to one of the 19 categories listed below to facilitate identification and location.

Category A – Neuroscience  
Category B – Physiology/Phylogeny/Ontogeny  
Category C – Pharmacology  
Category D – Circadian Rhythms  
Category E – Pediatrics  
Category F – Aging  
Category G – Sleep Deprivation  
Category H – Sleep Disorders – Breathing  
Category I – Sleep Disorders – Narcolepsy/Hypersomnia  
Category J – Sleep Disorders – Insomnia  
Category K – Sleep Disorders – Parasomnias  
Category L – Sleep Disorders – Movement Disorders  
Category M – Sleep Disorders – Neurologic Disorders  
Category N – Sleep in Medical Disorders  
Category O – Sleep in Psychiatric Disorders  
Category P – Instrumentation & Methodology  
Category Q – Healthcare Services, Research & Education  
Category R – Molecular Biology & Genetics  
Category S – Behavior, Cognition & Dreams

SLEEP 2009 fosters an environment in which members and attendees obtain education on the latest basic science, clinical science and technologies, which will further promote the continued growth of the field through the dissemination of new knowledge. We look forward to sharing in the success of this pivotal event.

David F. Dinges, PhD  
Editor-in-Chief

their parents in the evening, the data does not indicate increased parental monitoring during the night.

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## 0241

### A LONGITUDINAL INVESTIGATION INTO THE RELATIONS BETWEEN PERSONALITY, SLEEP, CONDUCT PROBLEMS, AND SCHOOL PERFORMANCE IN ADOLESCENTS

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**Introduction:** Different lines of research suggest that disturbed sleep is particularly detrimental during adolescence because it may contribute to emotional and behavioral disorders (e.g., Dahl & Harvey, 2007) and impair school performance (e.g., Wolfson & Carskadon, 2003). However, previous investigations were often limited in three respects: (a) They used cross-sectional rather than longitudinal designs, thereby precluding causal inference; (b) they did not take into account possible interactions with personality dimensions, in particular, the different facets of impulsivity; and (c) they relied on self-reported rather than on actual school grades. The present study sought to overcome these limitations.

**Methods:** A sample of 202 7th to 9th graders aged 12 to 16 years completed five questionnaires at an interval of 6 months: the short version of the Big Five Personality Inventory (Rammstedt & John, 2007), the UPPS Impulsive Behavior Scale (Whiteside & Lynam, 2001), the Insomnia Severity Index (Morin, 1993), the Multidimensional Fatigue Inventory (Smets et al., 1995), and the Strengths and Difficulties Questionnaire (Goodman, 2001). In addition, the school provided the grades that the adolescents obtained during the ongoing scholastic year.

**Results:** Insomnia severity and fatigue were correlated to emotional and behavioral problems ( $r$  range = .48 to .65,  $p < .001$ ), as well as to school grades ( $r$  range = .22 to .23,  $p < .01$ ). Five domains of personality were also correlated to emotional and behavioral problems: agreeableness ( $r$  range = -.32 to -.38,  $p < .001$ ), conscientiousness ( $r$  range = -.38 to -.42,  $p < .001$ ), neuroticism ( $r$  range = .44 to .48,  $p < .001$ ), impulsive urgency ( $r$  range = .57 to .60,  $p < .001$ ), and lack of perseverance ( $r$  range = .45 to .51,  $p < .001$ ). Moreover, the latter two facets were correlated to school grades ( $r$  = -.18 to -.28,  $p < .01$ ). Follow-up longitudinal structural equation models were computed to map the relations between the variables of interest across time.

**Conclusion:** The present findings support the notions that (a) disturbed sleep contributes to emotional and behavioral problems and to poor school performance in adolescents, and (b) the relations between sleep and behavioral measures are impacted by interindividual differences in personality.

## 0242

### DEFINING THE SLEEP PHENOTYPE IN CHILDREN WITH AUTISM—CONTRIBUTIONS OF POLYSOMNOGRAPHY AND ACTIGRAPHY TO PARENTAL CONCERNS

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**Introduction:** Sleep problems are highly prevalent in children with autism spectrum disorders (ASD), although a subset of children with ASD are reported by their parents to sleep well. Our goal was to identify objective measures that differentiate sleep in children with ASD with parental sleep concerns (poor sleepers-ASD-PS) from those without (good sleepers-ASD-GS).

**Methods:** Fifty eight children, ages 4-10 years, participated in this study. Forty-two had a clinical diagnosis of ASD confirmed by the Autism Diagnostic Observation Schedule, and were defined as ASD-PS ( $n = 27$ )

or ASD-GS ( $n = 15$ ) based on the Parental Concerns Questionnaire. Sixteen were typically developing (TD) and reported to be good sleepers. Sleep was measured with two nights of wrist actigraphy (Mini-Mitter AW64) and polysomnography (PSG); nights were averaged. Measurements obtained included total sleep time (TST), sleep latency (SL), sleep efficiency (SE), wake time after sleep onset (WASO), nighttime movement and fragmentation (MFI)-actigraphy only, and arousal index (AI)-PSG only. Kruskal-Wallis statistics were used to determine significance between all three groups, and Mann-Whitney U tests provided between group comparisons on the overall significant parameters.

**Results:** With actigraphy, the ASD-PS group differed significantly from the ASD-GS group on sleep latency [mean(SD)] [53.4(25.6) versus 23.0(19.0) minutes]; sleep efficiency [80.9(6.6) versus 88.3(5.1)%], and MFI [(12.5(3.4) versus 9.4(3.1)]. With PSG, the ASD-PS group differed significantly from the ASD-GS group on sleep latency [(54.0(41.7) versus 34.9(34.3)] minutes. The ASD-GS and TD children were comparable on sleep parameters, except that the TD children had a higher MFI [(14.0(3.3) versus 13.5(3.4)].

**Conclusion:** Our results support a phenotype of children with ASD who sleep well, defined by parent report and confirmed by objective measures of sleep, including PSG and actigraphy, which are complementary. Defining this phenotype provides the foundation for focused studies of pathophysiology and targeted interventions in autism and broader populations.

## 0243

### CO-SLEEPING, PARENTAL PRESENCE, AND SLEEP IN YOUNG CHILDREN: A CROSS-CULTURAL PERSPECTIVE

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**Introduction:** The aim of this study is to characterize co-sleeping, sleep patterns, and problems in a large cross-cultural sample of young Asian and Caucasian children.

**Methods:** Parents of 29,287 infants and toddlers from Australia, Canada, China, Hong Kong, India, Indonesia, Korea, Japan, Malaysia, New Zealand, Philippines, Singapore, Taiwan, Thailand, United States, United Kingdom, and Vietnam completed an expanded version of the Brief Infant Sleep Questionnaire. Co-sleeping was grouped by bed-sharing (BS), room-sharing (RS; in separate bed), and sleeping in a separate room (SR).

**Results:** Significant variability in BS and RS were found across countries, with 11.8% bed-sharing and 22.0% room-sharing in predominantly Caucasian (PC) countries compared to 64.7% and 86.5% respectively in predominantly Asian (PA) countries. Overall, children who slept in a separate room obtained more sleep, woke less at night, had less difficulty at bedtime, fell asleep faster, and were perceived as having fewer sleep problems. However, these clinically significant differences across sleep location were primarily observed in PC children, and not in PA children. A possible mechanism for these differences is whether a parent is present at bedtime when the child falls asleep. In PC countries, 97.4% (BS) and 83.9% (RS) of parents were present at bedtime compared to 40.9% if the child slept in a separate room. Minimal differences, however, were seen in PA, with 98.2% (BS) and 97.5% (RS) of parents present at bedtime compared to 87.4% of SR.

**Conclusion:** Overall, young children in PA countries are more likely to bed-share and room-share than those in PC countries. Interestingly, there are minimal differences in sleep patterns and sleep problems based on sleep location in Asian countries, compared to significant differences in Caucasian countries. One explanation may be negative sleep asso-