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Daily Concordance between Parent and Adolescent Sleep Habits

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Abstract

Purpose—To assess the daily concordance between parent and adolescent daily sleep habits, how that concordance compares to other predictors of sleep, and whether the degree of concordance varies across families.

Methods—A total of 421 adolescents ($M_{\text{age}} = 15.03$ years) and their primary caregivers ($M_{\text{age}} = 41.93$ years) reported their sleep, bed, and wake times on a daily basis for a two-week period. Approximately 80% of the sample repeated the same protocol one year later.

Results—Multi-level modeling indicated a significant concordance between parent and adolescent sleep, bed, and wake times on a daily basis. Concordance existed independent of other predictors of sleep such as day of the week and adolescent study time. Larger families and those with higher levels of parent-adolescent support exhibited greater concordance.

Conclusions—Adolescent sleep is connected to the sleep habits of their parents, above and beyond commonly-known structural and experiential factors that can shape teenage sleep. Efforts to improve teenage sleep should pay greater attention to the sleep patterns of parents and potentially other family members.

Keywords

adolescence; sleep; family

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Implications and Contribution

Families possess sleep routines that link the sleep habits of parents and teenagers above and beyond other factors known to shape adolescent sleep. Efforts to understand and improve adolescent sleep need to take account the sleep habits of other members of the family.

The authors declare no conflicts of interest.

Introduction

Restricted sleep is implicated in a multitude of adolescent health problems, including obesity, illness, risk-taking, accidents, substance use, and depression (1-4). Public health concern over the reduction in sleep across the high school years has focused attention on determinants of teenage sleep in the hope of identifying promising targets of intervention (5). Research on structural and experiential factors (e.g., school start-times, employment, studying; 6, 7) recently has been accompanied by efforts to understand the influence of the family environment. Studies have identified the role of a number of features of the family in shaping adolescent sleep, including emotional climate, quality of the marital relationship, and parental monitoring of teenagers bed and wake times (8-10).

Despite the increased attention upon the role of the family, there has been little work that has linked the actual sleep habits of parents and their teenagers. Research on the connection between parent and child sleep has focused largely on infants and young children (e.g., 11). The absence of work on adolescence may be due to an assumption that the connection between parent and child sleep would wane during the teenage years due to increased behavioral autonomy and the rising role of peers, school, and extra-familial activities in shaping the daily lives of youth (12). Yet even in the face of rising adolescent autonomy, there is likely to be a sleep routine within the family that influences teenage sleep. Like other family routines, such as mealtimes, there should be a degree of concordance between the bed and wake times of parents and children. Concordance, defined in this study as the extent to which the sleep habits of parents and children are dependent upon one another, is likely to occur because of the importance of a relatively quiet, inactive environment to promote sleep (13). Whether others remain awake at home can be a key feature of a sleeping environment, particularly for adolescents who increasingly possess the biological drive and psychological capacity to stay up later at night (14). Parents' own sleep behaviors – when they go to bed, how much they sleep, and when they wake up – therefore could be an important yet underappreciated determinant of teenage sleep patterns. Identifying the potential concordance between parents and adolescents, and comparing the impact of that concordance with other known predictors of teenage sleep, could draw attention to a key factor that may undermine efforts to improve sleep in other ways.

To our knowledge, there have been no studies that have linked independent reports of the sleep habits of parents and teenagers within the same family. The only study of which we are aware correlated adolescents' survey reports of their parents' and their own sleep (15). Although parents' and adolescents' sleep were correlated, two limitations of this study include a single reporter (i.e., adolescents) and the use of a single-time survey of sleep habits. We employed the daily checklist method to independently assess the daily sleep, bed, and wake times of parents and adolescents within the same family for two fourteen-day periods across two years. The daily sleep log approach provides better estimates of sleep habits than single, self-report survey measures and has been shown to be close to sleep estimates obtained by wrist actigraphy (16, 17). Most importantly, having multiple daily reports of sleep habits allowed us to estimate the concordance between parent and adolescent sleep at the daily level within individuals and families, thereby avoiding the bias

of unmeasured individual and family characteristics that confound any associations observed in a between-family approach (18).

We addressed two primary questions about the concordance between parent and adolescent sleep: [1] what are the average sleep, bed, and wake times of parents and adolescents within the same family?; and [2] is there a daily-level concordance between parent and adolescent sleep, bed, and wake times within the same family? We also examined two additional questions that placed the issue of sleep concordance in the context of the families' daily lives: [3] how does the daily-level concordance compare to other daily experiences that can impact sleep, such as adolescent studying, parental work, and stressful demands?; and [4] are there variations in concordance according to demographic and interpersonal characteristics of families? We specifically examined variations according to family socioeconomic status (i.e., parental education) and family size given how resources and the number of family members could constrain opportunities for independent sleep habits, as well as variations according to interpersonal support and conflict given prior research highlighting the role of the social environment and emotional climate of the home for sleep during the teenage years (8, 13, 19).

These questions were examined among a sample of parent-adolescent dyads from Mexican American backgrounds, a group underrepresented in research on sleep during the adolescent years. Addressing the concordance of sleep habits between different family members may be particularly relevant for this population given their emphasis upon family cohesion and solidarity (20). It remains to be seen, however, whether such family togetherness is evident in the sleep patterns of parents and adolescents.

Methods

Sample

A total of 421 adolescents ($M_{\text{age}} = 15.03$ years, $SD = 0.83$) with Mexican backgrounds and their primary caregivers ($M_{\text{age}} = 41.93$ years, $SD = 6.77$) were recruited from the ninth and tenth grades of two high schools in the Los Angeles area. Across the academic year, a few classrooms were randomly selected from official school rosters each week and class presentations, home mailings, and phone calls were made to the students and parents. The final sample represented 63% of the families who were reached by phone and deemed eligible to participate by self-reporting a Mexican ethnic background. The sample of adolescents was balanced according to gender (50% female) and the primary caregivers were predominantly mothers (83% mothers, 13% fathers, 4% other relatives). We use the term parents throughout the paper for the sake of ease.

The majority of the parents had completed at most some high school education (72.8% less than high school, 20.3% high school degree only, 6.7% at least some college). Most of the parents were foreign-born (80.5%) whereas most of the adolescents were born in the United States (87.4%). Families averaged about five members in the household ($M=5.18$, $SD=1.57$).

Using contact information obtained from participants at the first wave of the study, families were recruited to participate in a second wave of data collection approximately one year

later. A total of 336 families took part in the second wave of the study (79.8% of the original sample).

Procedures

All procedures were reviewed and approved by the UCLA Institutional Review Board. At each wave, interviewers visited families' homes and parents provided written consent for themselves and their adolescents, and adolescents provided written assent for themselves. Parents participated in a personal interview and adolescents completed a self-report questionnaire that assessed family background and interpersonal relationships.

Adolescents and parents were provided with a set of 14 daily checklists to be completed privately and independently each night before going to bed. Checklists were three pages long and took five to ten minutes to complete. Upon completion, participants folded and sealed the diary checklist, stamping the seal with an electronic time stamper. Interviewers also called families a few times during the two-week period in order to answer questions and encourage compliance. Diary checklists were picked up from the home at the end of the two-week period, when adolescents and parents were given \$30 and \$50, respectively, for their participation. Additionally, participants were told at the beginning of the study that they would receive an additional incentive of two free movie passes if inspection of the data indicated that the participants had completed the diaries correctly and on time. Compliance was high, with 96% and 95% of potential diaries completed by adolescents and parents.

Measures

Daily Checklist Measures—The daily checklist measures were completed each day at both waves of the study.

Sleep, Bed, & Wake Times: Adolescents and their parents answered the following questions: “How much time did you sleep last night?,” “What time did you go to bed last night?,” and “What time did you wake up this morning?” These questions are similar to those typically used in sleep diary studies (21, 22). Sleep Time was coded in terms of the number of hours, Bed Time was coded as the number of hours past 12:00 noon at which bed time occurred, and Wake Time was coded as the number of hours past 12:00 midnight that waking took place.

Adolescent Study Time and Parent Work: Adolescents reported the number of hours that they “studied or did homework while not in school” and parents indicated whether they “worked at a job, including paid work at home.” Study Time was coded in terms of the number of hours and Parent Work was coded 0=Yes, 1=No. These items have been previously used successfully in studies of daily adolescent studying and parental work (23, 24).

Adolescent and Parent Demands: Indices of stressful demands were created separately for adolescents and parents with a set of items from previous research on daily stress and sleep (7). Respondents responded “Yes” or “No” to indicate whether they “had a lot of work at home,” “had a lot of demands made by your family,” “had a lot of work at school,” “had a

lot of demands made by your teachers,” and “had a lot of demands made by friends” for adolescents. Parents reported on similar items, except they responded to demands that occurred at work (“had a lot of work at job” and “had a lot of demands made by your supervisor at work”) rather than at school. We created an index of daily demands to assess whether adolescents and parents experienced at least one of the demands each day (0 = no demands; 1 = any demand).

Interview & Questionnaire Measures—The following family characteristics were measured at both waves of the study.

Parent Education and Household Size: Parents reported their level of education using the following response options: “1=some elementary school,” “2=completed elementary school,” “3=some junior high school,” “4=completed junior high school,” “5=some high school,” “6=graduated from high school,” “7=trade or vocational school,” “8=some college,” “9=graduated from college,” “10=some medical, law, or graduate school,” and “11=graduated from medical, law, or graduate school.”

Household Size was measured by totaling the number of people parents listed in response to the question, “Who lives in this house with you?” Parents themselves were included in the total household size, as well. Household size averaged a little more than 5 members in size at both waves (W1: $M=5.18$, $SD=1.57$; W2: $M=5.01$, $SD=1.86$).

Interpersonal Support and Conflict: Adolescents and parents separately reported the extent to which adolescents were supported and understood by parents in the past month (25). Participants used a five-point scale (1 = *almost never*, 5 = *almost always*) to respond to items such as “I could count on my parents when I needed to talk” and “You showed that you understood [child name],” where the items were identical for adolescents and parents except for rewording to make the referents appropriate to the respondent. This measure had strong internal consistency at each wave for both adolescents ($as = .94$, $.94$) and parents ($as = .82$, $.83$).

Conflict was measured using a ten-item scale that assessed the frequency of conflicts and arguments adolescents had with their parents in the past month (26, 27). Adolescents and parents responded to questions such as “You and your parents ignored each other,” and “You and [child name] had a serious argument or fight,” where the items were identical for adolescents and parents except for rewording to make the referents appropriate to the respondent. This measure had strong internal consistency at each wave for both adolescents ($as = .86$, $.89$) and parents ($as = .87$, $.87$).

Results

Analysis Plan

Concordance was estimated as the extent to which the sleep habits of parents and adolescents were statistically dependent upon one another on a daily basis. Given the multi-level nature of the data (i.e., days within waves within individuals within families), SAS PROC MIXED (V9.2) was used to estimate the daily-level associations between the sleep

and daily experience measures, as well as individual and family variations in those associations. The estimation procedure accommodates the missing data inherent in repeated-measures designs such as this (e.g., missing a couple of days or the second wave of data collection), therefore all available assessment occasions with complete information about the predictor and criterion variables included in a particular analysis were used to make the estimations reported in this paper.

Given that our analyses often used reports of daily experiences to predict sleep, the latter of which was reported on the next day's diary after the night's sleep occurred, we dropped the first day report of the fourteen reports because there was no prior-day information for that report. The two waves of data collection provided us with up to 26 daily reports for each of two individuals within the same family and the accelerated longitudinal design (i.e., ninth and tenth graders each assessed at two time points, one year apart) allowed us to make our estimates across three years of high school (ninth, tenth, and eleventh grades) when sleep restriction tends to increase for adolescents (28).

A series of four-level (i.e., days within waves within individuals within families) hierarchical models were conducted to separately predict sleep hours, bed time and wake time. The specific predictors included in the models are described when their results are presented below and in the associated tables. Decisions about the specification of variance components in these models were guided by a series of likelihood ratio tests comparing the fit of nested models with different variance structures in an effort to uncover the most appropriate structure for this dataset. At the conclusion of this process, the models included random intercepts at the wave and person levels, and given previously-found individual differences in how adolescent sleep varies across school and non-school days (7, 13), school day was also included as a random effect at these two levels. Moreover, separate residual variances structures were estimated for adolescents and parents at the daily, wave, and person levels. The models also included separate random intercepts at the family level for each of the two time points of the study, allowing us to account for unmeasured characteristics of groups (i.e., families) changing over time (29).

Attrition analyses (i.e., Wave 1 to Wave 2) indicated that adolescents who only participated in Wave 1 slept more ($M=8.88$, $SD=0.80$) and woke up earlier ($M=7.48$, $SD=0.82$) compared to their peers who participated in both waves of the study (Sleep hours: $M=8.43$, $SD=1.02$; Wake time: $M=7.56$, $SD=1.07$), $t(411) = .38-.61$, $p<.05$. There were no differences in parents' average sleep habits as a function of their participation in one or both waves of the study.

Average Sleep, Bed, & Wake Times

We first estimated average sleep, bed, and wake times with a model that included parent (1=parent, 0=adolescent), adolescent gender, grade, and school day, along with two-way interactions between parent and each of the other three variables as predictors. The coding of the parent variable means that adolescents were the baseline and that the intercept and main effects estimates are for the adolescents. The interactions with the parent variable indicate whether those estimates differ for parents.

As shown in Table 1, ninth grade adolescents reported sleeping an average of 8.57 hours per night before non-school days. They slept 0.48 hours less the nights before school days and went to bed and woke up earlier on those nights. There were no gender differences in sleep times, but tenth and eleventh grade students reported less sleep than those in the ninth grade, largely because of later bedtimes, the changes in which were larger than simultaneous changes toward later wake times. Parents slept almost an hour less than adolescents on non-school nights and there was less difference in sleep, bed, and wake times between non-school and school nights for parents. The grade differences in bed and wake times also were significantly less for parents than for adolescents.

Concordance in Sleep, Bed, and Wake Times

In the next set of models, we examined the concordance between parent and adolescent sleep, bed and wake times by adding measures of the *other* family member's sleep, bed and wake times as predictors to the previous models. Following the Actor-Partner Interdependence Model (APIM; 30), each line of data included the actor's (i.e., adolescent or parent) sleep measure (i.e., the dependent variable) and the corresponding partner's (i.e., other family member) sleep (i.e., the predictor). As such, any given sleep variable appears twice on the dataset, as the dependent variable on one line of data and as the predictor on another line of data. The other person's daily sleep (i.e., other person's sleep, bed time, wake time) predictors were person-centered at each wave. Additionally, we included interaction terms between other persons' sleep measures with parent, adolescent gender, and grade in the models in order to examine whether the concordance between parent and adolescent sleep was stronger for adolescents or parents, males or females, and in the 10th or 11th grade relative to the 9th grade.

A significant concordance was evident between parent and adolescent sleep time, indicating that adolescents slept more or less on days in which their parents slept more or less (Table 2). This concordance was equally strong for both adolescents and their parents and generally did not vary according to grade and gender; the only exception being greater concordance in bed time among girls. The concordance in overall sleep time appeared to be attributable to concordance in both bed and wake times for parents and adolescents.

Other Daily Experiences

Next, we examined the concordance in parent-adolescent sleep habits relative to the impact of other known predictors of sleep by adding measures of the other daily experiences (i.e., study hours, work, demands), person-centered at each wave, as well as the interactions between those experiences and the parent variable to the models previously shown in Table 2.

As shown in Table 3, adolescents slept significantly less on nights after they spent more time studying. They also woke up significantly earlier the next morning. The significant interactions between studying and the person (i.e., parent vs. adolescent) indicate that adolescents' studying more strongly predicted the sleep habits of the adolescents than the habits of the parents. Teenagers' sleep habits, however, were not related to whether their parents worked that day. The association of parental work with sleep habits was

significantly different for parents. Stressful demands were not related to sleep, bed, and wake times.

Most importantly, the previously-observed concordance between parent and adolescent sleep remained even after controlling for these other experiences, suggesting the existing of a sleep routine in the family that may shape adolescent sleep above and beyond the other events in their daily life.

Variations in Concordance

Finally, variations in concordance according to families' demographic and interpersonal characteristics were estimated by using the parents' reports of demographic characteristics (i.e., education and household size) to predict the concordance for both parents and adolescents, and each individual's reports of interpersonal (i.e., support and conflict) characteristics to predict concordance for their own sleep. The measures of family characteristics were grand-mean centered at each wave. Specifically, both the main effects of family characteristics and their interactions with other persons' sleep were included in the models, and the interaction term estimated whether concordance varied according to family characteristics.

Results suggested that the concordance varied significantly according to household size and parent-adolescent support (see Table 4). As shown in Figure 1a-b, concordance between parent and adolescent sleep was strongest among larger families and those with more supportive parent-adolescent relationships. The greater concordance in sleep time in larger households appeared to be due to greater concordance in wake times, whereas the greater concordance in sleep time according to parent-adolescent support appeared to be due to marginally greater concordance in bed times. Parental education and interpersonal conflict were unrelated to concordance in sleep, bed, and wake times.

Discussion

Adolescents and their parents demonstrated a significant concordance between their daily sleep habits. The fact that this daily contingency in sleep, bed, and wake times was observed even after accounting for daily experiences (e.g., school day, study time) that shape sleep suggests the existence of a daily-level sleep routine within the family that should be considered along with other important structural and experiential factors that can disrupt or promote teenage sleep (6, 8-10, 13). By routine, we mean a contingency between the sleep habits of family members that appears to be independent of other events of the day. These results suggest that efforts to improve teenage sleep that focus only on the habits of teenagers themselves also should consider the sleep routines of parents, and potentially other members of the family.

Concordance varied across two key demographic and interpersonal family characteristics. Larger households demonstrated greater daily contingency between parent and teen sleep. We did not have measures of the physical space of the home, but it is likely that individual members of large households influence one another's sleep habits because of less privacy, more noise, and potentially shared sleeping quarters (13). Concordance also was greater in

families who reported higher levels of interpersonal support. Such levels of family support may lead to more shared family routines, such as sleep habits, and a lack of such closeness likely means that individual family members function more independently on a daily basis. The extent to which sleep is a routine, therefore, appears to vary across families. Additional research should examine additional potential sources of variability, such as the actual physical dimensions and sleeping arrangements of the home and other socio-emotional characteristics such as the existence of behavioral or psychological problems in the family (31, 32). Also, the role of other individual characteristics such as the eveningness or morningness of different family members should be examined (33).

The results of this study should be considered alongside its limitations. An important weakness is that the direction of causality between parent and adolescent sleep could not be determined; only the degree of concordance could be estimated. Closer observational research or more intensive experience sampling on a momentary basis might help to determine whether the parent or the teen is driving the sleep routine in the family and whether that direction itself might vary across different families. Our study employed self-reports of sleep habits, which can be less accurate than more objective indicators such as wrist actigraphy. However, the fact that concordance was observed with independent sleep reports from adolescents and parents that were modeled conservatively at the daily level suggests that the linkage was not due to reporting bias within the same person or family. There are other experiences and factors that were not assessed in this study (e.g., noise, light, neighborhood security) that might have a shared effect on the sleep of multiple families and should be considered in future research (13). It remains to be seen whether the patterns of concordance observed in this sample of mostly mothers and adolescents with Mexican backgrounds would be evidenced among fathers and other ethnic groups. Finally, we did not measure other sleep indices (e.g., sleep latency, efficiency), and it would be interesting to examine whether parent-adolescent concordance extends to aspects of sleep quality and continuity such as these.

In conclusion, our results suggest that as efforts to understand and improve adolescent sleep increasingly incorporate family-level factors, greater attention should be paid to the actual sleep habits of parents and potentially other family members. Families likely possess sleep routines that can shape teenage sleep habits independently of other factors such as the emotional climate of the home and the degree to which parents monitor bed and wake times. As with other family routines, the effects of parents' and adolescents' sleep habits are likely to be mutual and bidirectional. Continued research should focus on how the magnitude and direction of these effects vary across different adolescents and their families.

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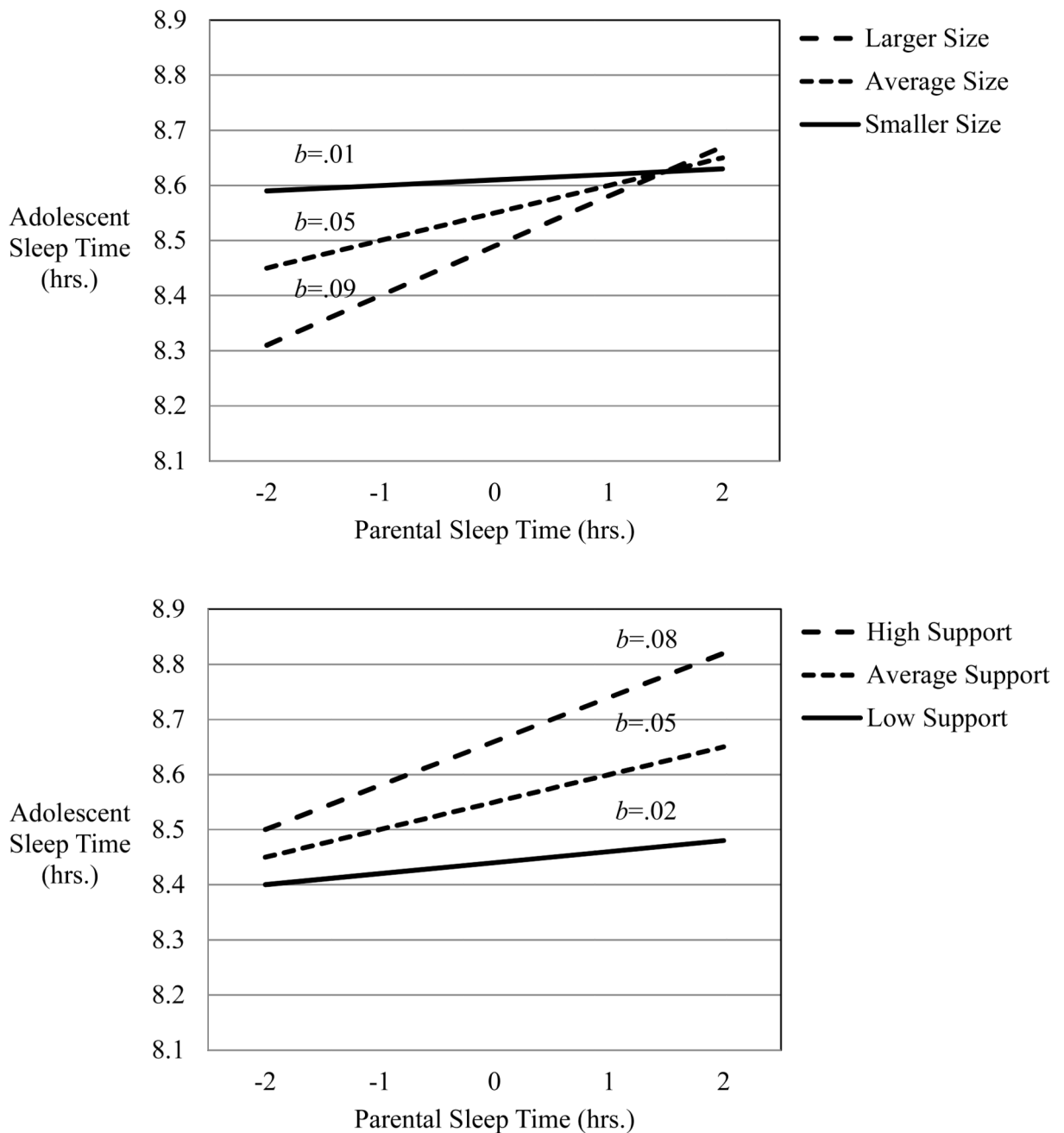


Figure 1a-b.

Greater Concordance between Parent and Adolescent Daily Sleep Time in Families with Larger Household Size and Greater Interpersonal Support.

Note. Household size and interpersonal support were centered at the sample mean within each wave. For household size, “Average” represents families at that mean, “Larger” represents families 2 units (i.e., individuals) above that mean and “Smaller” represents families 2 units below that mean. For interpersonal support, “Average” represents families at that mean, “High” represents families 1.5 units (i.e., on the 1-5 scale) above that mean and “Smaller” represents families 1.5 units below that mean. Parental sleep time was centered at

the person mean within each wave, where 0 represents that mean and the intervals are in hours.

Table 1

Average Sleep, Bed, and Wake Times

	Sleep Time		Bed Time		Wake Time	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	8.57	0.06***	10.76	0.06***	7.53	0.05***
Parent	-0.90	0.09***	0.08	0.08	-0.68	0.09***
Adolescent Gender	-0.00	0.04	-0.00	0.04	-0.02	0.04
Gender × Parent	0.02	0.06	0.06	0.05	0.06	0.06
Tenth Grade	-0.21	0.07**	0.38	0.06***	0.18	0.06**
Tenth × Parent	0.05	0.10	-0.31	0.08***	-0.13	0.10
Eleventh Grade	-0.36	0.09***	0.59	0.08***	0.30	0.08***
Eleventh × Parent	0.10	0.13	-0.46	0.11***	-0.36	0.13**
School Day	-0.48	0.03***	-0.40	0.02***	-0.91	0.03***
School Day × Parent	0.20	0.03***	0.23	0.03***	0.44	0.04***

Note. Sleep is coded in hours; Bed Time is coded in hours past 12:00 noon and Wake Time is coded in hours past 12:00 midnight. Parent is coded 0=adolescent, 1=parent; Adolescent Gender is effect coded -1=male, 1=female; Tenth and Eleventh Grades are dummy-coded with Ninth grade as the baseline; School Day is coded 0=non-school day, 1=school day. Given the coding, the intercept refers to adolescents at the ninth grade on non-school days.

+
p<.10

*
p<.05

**
p<.01

p<.001

Table 2

Daily Parent-Adolescent Concordance in Sleep, Bed, and Wake Times

	Sleep Time		Bed Time		Wake Time	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	8.55	0.06***	10.76	0.06***	7.51	0.05***
Other Person's Time	0.07	0.01**	0.16	0.02***	0.13	0.02***
Other's Time × Parent	-0.02	0.02	-0.02	0.02	-0.03	0.02
Other's Time × Gender	-0.00	0.01	0.03	0.01*	0.01	0.01
Other's Time × Tenth	0.00	0.02	-0.01	0.03	0.00	0.02
Other's Time × Eleventh	-0.01	0.02	-0.05	0.03	-0.03	0.03

Note. Models also included the same predictors shown in Table 1 as controls (i.e., parent, adolescent gender, tenth and eleventh grades, school-day, and their interactions with parent), which are not shown here. Sleep is coded in hours; Bed Time is coded in hours past 12:00 noon and Wake Time is coded in hours past 12:00 midnight. The intercept refers to adolescents at the ninth grade on non-school days. Other Person's Time refers to the other family member's sleep, bed, and wake time, respective to the appropriate column, and is coded in the same manner as the outcome variables and is centered within each person at each wave.

+ p<.10

* p<.05

** p<.01

*** p<.001

Table 3

Sleep, Bed, and Wake Times as a Function of Other Daily Experiences and Other Person's Sleep, Bed and Wake Times

	Sleep Time		Bed Time		Wake Time	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	8.56	0.07***	10.76	0.06***	7.54	0.06***
Study Time	-0.11	0.03***	0.03	0.02	-0.08	0.02***
Study × Parent	0.14	0.03***	-0.06	0.02*	0.13	0.03***
Work Hours	0.01	0.01	-0.01	0.01	0.00	0.01
Work Hours × Parent	-0.02	0.01*	0.02	0.01*	-0.01	0.01
Own Demands	-0.01	0.04	0.00	0.04	-0.01	0.04
Own Demands × Parent	-0.04	0.07	-0.11	0.07	-0.05	0.07
Other Person's Demands	0.07	0.07	-0.06	0.06	0.01	0.06
Other's Demands × Parent	-0.01	0.08	0.07	0.07	-0.05	0.07
Other Person's Time	0.07	0.02***	0.15	0.02***	0.14	0.02***
Other's Time × Parent	-0.02	0.02	-0.02	0.02	-0.03	0.02

Note. Models also included the same predictors shown in Table 1 as controls (i.e., parent, adolescent gender, tenth and eleventh grades, school-day, and their interactions with parent), which are not shown here. Sleep is coded in hours; Bed Time is coded in hours past 12:00 noon and Wake Time is coded in hours past 12:00 midnight. The intercept refers to adolescents at the ninth grade on non-school days. Other Person's Time refers to the other family member's sleep, bed, and wake time, respective to the appropriate column, and is coded in the same manner as the outcome variables and is centered within each person at each wave. Study Time is coded in hours, Work Day is coded 0=non-work day, 1=work day, Own and Other Person's demands is coded 0 = no demands; 1 = any demand, and all four daily experiences are centered within each person at each wave.

⁺ p<.10

* p<.05

** p<.01

*** p<.001

Table 4

Daily Parent-Adolescent Concordance in Sleep, Bed, and Wake Times as a Function of Demographic Characteristics and Interpersonal Relationships

	Sleep Time		Bed Time		Wake Time	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	8.55	0.06***	10.78	0.06***	7.53	0.06***
Parental Education	-0.02	0.01	0.01	0.01	-0.00	0.01
Household Size	-0.03	0.02 ⁺	0.01	0.02	-0.02	0.02
Interpersonal Support	0.11	0.03***	-0.05	0.03 ⁺	0.04	0.03
Interpersonal Conflict	-0.07	0.04 ⁺	0.03	0.03	-0.01	0.04
Other Person's Time	0.05	0.01***	0.13	0.01***	0.09	0.01***
Other's Time × Education	0.00	0.00	0.01	0.01	0.00	0.00
Other's Time × Household	0.02	0.01**	0.00	0.00	0.01	0.01 ⁺
Other's Time × Support	0.02	0.01*	0.03	0.01*	-0.00	0.01
Other's Time × Conflict	-0.00	0.01	-0.02	0.02	-0.00	0.01

Note. Models also included the same predictors shown in Table 1 as controls (i.e., parent, adolescent gender, tenth and eleventh grades, school-day, and their interactions with parent), which are not shown here. Sleep is coded in hours; Bed Time is coded in hours past 12:00 noon and Wake Time is coded in hours past 12:00 midnight. The intercept refers to adolescents at the ninth grade on non-school days. Other Person's Time refers to the other family member's sleep, bed, and wake time, respective to the appropriate column. Parental Education, Household Size, Interpersonal Support, and Interpersonal Conflict were centered at the sample mean at each wave.

⁺ p<.10

* p<.05

** p<.01

*** p<.001