Social and Demographic Predictors of Preschoolers' Bedtime Routines

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Abstract

Objective—To examine associations of child and family sociodemographic characteristics with preschooler bedtime routines.

Method—We use parent-report data on 3,217 3-year-old children (48% black; 26% Hispanic; 26% white) from the Fragile Families and Child Wellbeing Study to examine whether child and family characteristics are associated with the presence, time, and consistency of bedtime routines.

Results—Over 80% of sample children have a bedtime yet only two-thirds follow it. After extensive controls for maternal education, family structure, and other household characteristics, Black and Hispanic children have later bedtimes than white children and reduced odds of using regular bedtimes (by 22% and 29%, respectively) and using bedtime routines (by 47% and 33%, respectively). Low maternal education, increased household size, and poverty are associated with decreased use of parent-child interactive and hygiene-related bedtime routines.

Conclusion—Children from disadvantaged households are less likely to have consistent bedtime routines than their more advantaged counterparts. This may contribute to later disparities in sleep quality, duration and timing, factors known to be associated with adverse behavioral, cognitive, and health outcomes.

Keywords

bedtimes; bedtime routines; children; sleep

For many young children, getting ready for bed involves a routine that facilitates the transition from wakefulness to sleep. Routines may include a combination of diaper changing/toileting, changing into sleep clothes, brushing teeth, reading a story, singing, and/or getting good-night kisses, among others.[1] The American Academy of Pediatrics recommends regular bedtimes and bedtime activities in order to cue children for falling asleep and help them associate the pre-bedtime period with the upcoming sleep period.[2] The use and enforcement of regular bedtimes and consistent, quiet bedtime routines are associated with improved success in going

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to bed, falling asleep, sleeping through the night, and waking in the morning,[3-9] which in turn is associated with better physical health, behavioral, and cognitive outcomes.[10-15] Thus, bedtime routines are an important behavioral component for the healthy sleep and development of preschool-age children. Understanding the correlates of positive sleep behaviors will help to identify potential mechanisms and develop interventions that may lead to improved sleep and well-being for children.

Although evidence suggests that regular bedtimes and bedtime routines are commonly used with young children, existing studies have tended to use small to modest samples generally comprised of relatively advantaged, primarily white children. For example, one study of 100 middle-class white toddlers found that 93% had a bedtime routine and 95% had a regular bedtime.[16] Another study of largely white middle class preschoolers found that 66% of children had a bedtime routine lasting 30 minutes or more during their preschool years, and at least 75% took a toy or blanket to bed.[1] Despite these relatively high rates of bedtime routines among white, middle-class children, characteristics of bedtimes and bedtime routines among less advantaged children have received less attention. Bedtime routines may reflect a variety of social, cultural, economic and environmental conditions of parents and the households in which children live.[17,18]

The few studies that have examined the social characteristics of preschooler sleep-related behaviors have focused on race/ethnicity. For example, several studies show racial and cultural differences in children's napping patterns, sleep duration, and bedtimes.[17-23] Findings suggest that black children are more likely to nap and receive less nighttime sleep than white children, [20,23,24] and are also at higher risk for sleep-disordered breathing.[25-27] A prior analysis of the Fragile Families and Child Wellbeing (FFCW) dataset[18] reports significant racial/ethnic variation in a handful of bedtime routines. Specifically, net of a host of child and family characteristics, black and Hispanic children are significantly less likely to experience bedtime story telling than white children, and black children are less likely than white children both to receive a comfort toy at bedtime and to brush their teeth before bed.

Our analyses go beyond racial/ethnic differences in sleep behaviors by investigating the relative roles of a host of sociodemographic factors and their associations with children's bedtime routines. These additional factors include maternal education, family structure (e.g., single mother, biological father present, social father present), poverty status, and household characteristics (e.g., number of bedrooms, number of adults in the household, and number of children in the household), that may contribute to divergent sleep patterns across racial/ethnic groups. We focus on caregiver-controlled behaviors related to bedtime (i.e., having a bedtime, using the bedtime, types of bedtime routines) because they are potentially modifiable factors that may mediate relationships between social factors and children's actual sleep quality and duration.

METHODS

Sample

We used data on 3,217 children followed from birth to age 3 in the Fragile Families and Child Wellbeing Study (FFCW). FFCW is a longitudinal birth cohort study of children born between 1998 and 2000 in 20 U.S. cities with populations of over 200,000. The Study includes a substantial over sample of unmarried births, such that children are more likely to live in low-income families, to have nonresident fathers, to be Black or Hispanic, and to have parents with lower levels of education than children in a nationally-representative sample. Within marital status categories, however, the demographic characteristics are similar to those reported by the National Center for Health Statistics (NCHS). A complete description of the sample and study design is available elsewhere.[28]

Mothers included in the sample were screened for eligibility shortly after the birth of their child. Study eligibility required that mothers intended on keeping their baby, spoke English or Spanish well enough to comprehend and answer interview questions, and were healthy enough to complete the interview. In addition, the child's father needed to be alive. Fewer than 5% of mothers interviewed were ineligible. Mothers younger than 18 years old were excluded in about half of the hospitals due to legal restrictions. However, since births to mothers less than 18 years old accounted for only 4% of all births in 1999, we did not expect this exclusion to affect our results. Mothers had a high baseline response rate: 82% among married mothers and 87% among unmarried mothers (where the denominator was eligible births). The baseline study sample consisted of 4,898 births.

FFCW researchers interviewed families in person shortly after the focal child was born and conducted follow-up interviews by telephone when the child was approximately 12- and 36-months of age. During each of these interviews, respondents provided extensive information about family/household resources, structure, and functioning; program participation; physical and mental health; and parenting behaviors. Subsequent to the 36-month telephone interview, parents were asked to participate in an in-home module designed to assess multiple domains of parenting, the home environment, mother-child interactions, and child cognitive and emotional/behavioral development through both a questionnaire and a set of interviewer observed items. Mothers who refused an in-home visit were asked to complete the questionnaire portion of the in-home module by telephone. The bedtime-related items that are the focus of this study are included in the questionnaire portion of the 36-month in-home module. A total of 3,327 families participated in this module either in person or by telephone. We excluded from our analyses 110 families who had missing data on the bedtime-related items. As such, our analysis sample consisted of 3,217 children. All of our regression models included indicators for missing data on the covariates.

On average, sample children were just under 39 months of age at the time of the in-home interview, and the mother's average age at the child's birth was 25.2 years.

Measures

Our primary outcome variables are a set of five bedtime-related behavior variables that were collected at the 36-month in-home interview: (1) whether a child has a regular bedtime and, if so (2) the hour of bedtime and (3) whether the family enforced this bedtime at least four of the last five weeknights (i.e., Monday through Friday); (4) whether the family has one or more bedtime routines and, if so (5) whether the family engaged in these routines at least four of the last 5 weeknights. We also created indicators for five categories of bedtime routines : (1) interactive with parent (read story, tell story, pray, talk, sing, play a game, cuddle), (2) non-interactive with parent (give child toy, other), (3) watch television or a video, (4) eat a snack, and (5) hygiene-related (bathe, use the toilet, brush teeth). These categories are not mutually exclusive.

We categorized our explanatory variables into three groups: Child, Caregiver, and Household characteristics. Child characteristics are age of child in months, an indicator for whether the child is female, and an indicator for whether the child was low birth weight.

Caregiver characteristics are age of mother (in years) at the birth of the focal child, race of mother (White, Hispanic, Black, Other), mother's education (less than high school, high school, more than high school), mother's employment status (not working, working part-time, working full-time), mother's verbal test score, mother's depressive symptoms, and mother took the verbal test in Spanish. Maternal depression is measured for all respondents (in-home and phone) through the Composite International Diagnostic Interview – Short Form (CIDI).[29] Mothers' verbal test scores are measured by the Peabody Picture Vocabulary Test-Revised

(PPVT-R).[30,31] The PPVT-R measures language ability and receptive vocabulary and has been widely used to study child development, but was only available for the in-home interviews (as a result, 825 women did not take this test). Some mothers (5.3%) chose to take the Spanish version of the test. We include an indicator for this and missing PPVT-R in our regression models.

Household characteristics include family structure (single-mother family, mother and social father family, or mother and biological father family); number of adults in the household, number of children in the household, number of bedrooms in the household, and a measure of the family's "permanent" income to poverty status. Poverty status is calculated as the mean annual income to poverty status from the focal child's birth through the age 3 interview. It is then divided into three categories representing whether on average across this time period the family was: at or below the poverty threshold for their family size, 1-2 times the poverty threshold, or greater than 2 times the poverty threshold).

Data Analysis

First, we present descriptive statistics of the distribution of bedtime-related behaviors for our full sample. We next use logistic regression (for dichotomous bedtime-related behavior outcomes: has bedtime, uses bedtime 4+ nights a week, has bedtime routine, uses bedtime routine 4+ nights a week, and each of the specific bedtime routines) and ordinary least squares (OLS) regressions (for the continuous outcome: hour of bedtime) to identify cross-sectional associations between bedtime-related behaviors and a host of child and household characteristics described above. The general form of our regression models (show in OLS format) is:

$$SRB_i = \alpha + \beta_1 Child_i + \beta_2 Caregiver_i + \beta_3 Household_i + \varepsilon_i \tag{1}$$

where SRB_i refers to a particular bedtime-related behavior variable (i.e., a separate model is estimated for each bedtime-related behavior and for each of the bedtime routines) and $Child_i$, $Caregiver_i$, and $Household_i$ refer to vectors of child, caregiver, and household characteristics.

We hypothesize that children from more disadvantaged household environments will be less likely to have bedtime-related routines that are conducive to regular, high-quality sleep.

RESULTS

Table 1 shows the distribution of the prevalence of bedtime routines for all children in the sample in the first column. In the second through fifth columns, the distribution is shown contingent upon having a bedtime, using a bedtime (4 or more of the last 5 weeknights), having a routine, and using a routine (4 or more of the last 5 weeknights). As shown, 81% of children in the sample have a bedtime, but only 67% of the sample used a bedtime. Of those sample children who use a bedtime, just 5% are put to bed before 8:00 p.m., 39% between 8:00 and 8:59 p.m., 46% between 9:00 and 9:59 p.m., and 11% at 10:00 p.m. or later. On the one hand the 81% of children who use a bedtime, fewer than half are put to bed before the commonly used U.S. based recommendation of 9:00 PM.[9] Furthermore, although 81% of sample children are reported to have a bedtime routine, only 71% are reported to have engaged in a bedtime routine on 4 of the last 5 weeknights. Sixty percent of children engage in an interactive routine with their parents and 58% have a hygiene-related routine. Non-interactive routines (26%), television or video watching (11%), eating (15%) are less common. While these types of routines are not mutually exclusive, the majority of families report having only one (22%) or two (35%) types of routines. Fewer than 6% of all households have 4 or 5 bedtime routines.

The most common overlapping of bedtime routines is interactive routines with hygiene-related routines.

Table 2 shows selected social and demographic characteristics of our sample and the distribution of these characteristics across the bedtime and bedtime routine variables. Twenty-two percent of the mothers in the sample are white, 26% are Hispanic and 48% are black, and the remaining are of other or unknown race/ethnicity. Over half of the children have their biological father present (51%), 39% live with a single mother, and 9% have a social father (i.e., stepfather or unrelated, cohabiting romantic partner of their mother) present. We grouped cohabiting and married families together with regard to both biological and social father presence. Just over one third of the mothers in the sample (34%) did not graduate from high school and about 38% had "permanent" (i.e., mean) incomes that were, on average, at or below poverty during the first three years of the child's life. In the unadjusted results, mothers of other race/ethnicity are more likely to report that their child has a regular bedtime (88%) than white mothers (83%), black mothers (82%), and Hispanic mothers (78%). Yet, white mothers are more likely to report regular use of the bedtime at 72%, compared to 65% for Hispanic mothers, 66% for black mothers, and 68% for mothers of other racial or ethnic groups. White mothers are also more likely to report having (90%) and using a bedtime routine (83%) than all of the other groups. Family structure is also associated with having and using bedtimes and bedtime routines: families that include a social father are most likely to report having (86%) and using (69%) a bedtime, whereas those that include the child's biological father are most likely to report having (83%) and using (74%) a bedtime routine. Single mother families are least likely to engage in regular use of bedtime routines (68%). Higher income families and those in which mothers have higher levels of educational attainment are more likely to engage in all of the bedtime-related activities than their lower income families and those with less educated mothers.

Tables 3 and 4 show our regression results. The first four models in Table 3 utilize the dichotomous bedtime-related behavior variables as outcomes. As such, we estimate logistic regressions and report the results in odds ratios. The fifth model utilizes a continuous measure of a child's actual bedtime in hours. As such, we estimate an OLS regression and present the resulting coefficients.

Column 1 of Table 3 presents results for whether the child has a regular bedtime. Race/ethnicity is not a statistically significant predictor of this outcome. Children of single mothers and those with a social father present are more likely to have a bedtime (OR=1.36, p<.01 and OR=1.84, p<.001, respectively) compared to children with their biological father present. Children whose mothers have less than a high school education are 27% less likely (OR=.73, p<.05) to have a bedtime than those who have a mother with more than a high school education. Children whose mothers took the verbal test in Spanish are nearly twice as likely (OR=1.94, p<.01) to have a bedtime as those whose mothers took the PPVT-R in English.

Column 2 presents results for whether a child used his or her bedtime on 4 or more of the 5 weeknights prior to the interview. Statistically significant relationships are only observed for the race/ethnicity of the mother: children of Hispanic and black mothers are 29% (OR=.71, p<.01) and 22% (OR=.78, p<.05) less likely, respectively, to use their bedtimes than children of white mothers.

Results for whether the child has any bedtime routine are shown in the third column. Here, we find that race/ethnicity, maternal education, whether the mother took the test in Spanish, the number of children and adults in the household, and the number of bedrooms in the housing unit are significant predictors. Children of Hispanic and black mothers are less likely to have bedtime routines (OR=.74, p<.10 and OR=0.55, p<.001, respectively) than are children of

white mothers. Children whose mothers have a high school education or less are less likely to have bedtime routines (OR=0.68, p<.01 and OR=0.70, p<.01, respectively) than those whose mothers have more than a high school education. The number of adults and children are inversely associated with having a bedtime routine, whereas the number of bedrooms in the house is positively associated with this outcome.

Results for using a bedtime routine on four or more of the 5 weeknights prior to the interview are similar to those for whether the child has a bedtime routine with regard to race/ethnicity, number of people in the household, and number of bedrooms in the housing unit. In contrast, however, the association between the mother's educational attainment and using a bedtime routine is statistically non-significant. That is, while in column 3, there is a significant and positive gradient between mother's education and her preschooler having a bedtime routine, actual use of a bedtime routine appears unrelated to educational attainment.

Hour of bedtime (column 5) is predicted by child age, mother's race/ethnicity, maternal education, number of children in the household, poverty level, maternal work, and whether the mother took the Spanish version of the PPVT-R. Older children, children of Hispanic mothers, black mothers, and mothers in the "other" race/ethnicity category have later bedtimes than younger children and those whose mothers are white. Bedtimes are slightly earlier in homes with more children and those in which the mother does not work (p<.10), and slightly later in households with incomes between one and two times the poverty line and those in which the mother has less than a high school education (p<.10) or took the test in Spanish.

The models presented in Table 4 examine associations of sociodemographic characteristics and particular types of bedtime routines. A greater number of sociodemographic factors are associated with interactive routines (reading, storytelling, prayer, etc.) and hygiene-related routines than with the other types of bedtime routines. The use of interactive routines is positively associated with maternal age, education, and PPVT-R score, as well as family income-to-poverty status and the number of bedrooms in the housing unit. It is negatively associated with the number of children and adults in the household. Additionally, black mothers are less likely to engage in interactive bedtime routines than white mothers (OR=.71, p<.01). Turning to hygiene-related routines, we find they are less common among families with non-white mothers than those with white mothers (OR=.73, p<.01; OR=.77, p<.05; and OR=.62, p<.05 for black, Hispanic, and those in the "other" race/ethnicity category, respectively), and that their use is positively associated with a child being female, maternal education, maternal work, maternal PPVT-R score, and the number of bedrooms in the household, and negatively associated with child age, the family being in poverty, the number of adults in the household, and the mother taking the test in Spanish.

We also find some significant associations of the sociodemographic factors with the other types of bedtime routines. Non-interactive bedtime routines are less common among black mothers (OR=.72, p<.01) than white mothers, positively associated with maternal age and PPVT-R score, and negatively associated with maternal full-time work and the mother taking the PPVT-R in Spanish. Television and video watching are less common among children of black and Hispanic mothers (OR=0.59, p<.001 and OR=.69, p<.05, respectively) than those of white mothers. They are also positively associated with maternal work, and negatively associated with child age, maternal PPVT-R score, and the number of bedrooms in the household. Finally, with regard to whether a child's bedtime routine involves eating, we find that black mothers and those reporting in the "other" race/ethnicity category are less likely to give their children a snack or food before bedtime (OR=.70, p<.05 and OR=.49, p<.05) than white mothers, that child age and the mother having taken the test in Spanish are negatively associated with the child eating before bed.

DISCUSSION

Looking at the descriptive results alone, we find that, in this sample of relatively disadvantaged urban children, having regular bedtimes (81%) and bedtime routines (81%) are quite common. On the other hand, the regular use of these bedtimes (67%) and bedtime routines (71%) appear lower than estimates taken from primarily white middle class samples.[1,16]

Turning to the multivariate results, we find that within this sample, Black and Hispanic families and those who are socially disadvantaged (e.g., mothers with lower levels of income and education) are less likely to provide their 3-old children with regular bedtimes and bedtime routines. The size of these effects varies, but differences in bedtime-related behaviors by race and ethnicity tend to be quite large, suggesting 30-50% lower odds of engaging in regular bedtimes and bedtime routines after controlling for the other sociodemographic factors. By comparison, the education effect sizes suggest that children of mothers with less than a high-school education are about 30% less likely to have consistent bedtimes and bedtime routines than those of mothers with more than a high-school education. Of particular note, the less advantaged mothers in our sample are more likely to forgo interactive or hygiene-related bedtime routines for their preschool age children than their more advantaged counterparts. These behaviors may be due to increased stress in these households, lower levels of structure and routines, in general, or a lack of awareness of the benefits of bedtime routines. The finding that mothers who took their verbal test in Spanish are more likely to have bedtime routines for their children may be explained by these families being more traditional than socioeconomically similar Hispanic families where the mothers are more proficient in English.

In addition, family structure appears to have an association with having (but not using) a regular bedtime, but in an unexpected direction. Having a biological father present in the household is associated with decreased likelihood of having a regular bedtime. This may be because the presence of a biological father may be associated with parents wanting to have the child stay up later when either or both parents return home for the day.

Limitations of our analyses include possible reporting error and lack of direct data between self-report of bedtime routines and quality of sleep from this data set. A similar measure of children's routines, the Child Routine Inventory, has shown strong internal validity (α=.90) and test-retest reliability (r=.86).[32] For example, LeBourgeois' analysis of this measure among a racially diverse community sample of 2-8 year old children from Southern Mississippi[33] shows high validity of the parent-report of bedtime data with actigraphy (r=.76) and sleep diary data (r=.73). An additional concern is that there were two methods (phone and in-home) of collecting sleep data. This may have biased our results if there were both systematic differences in who refused and in-home interview (i.e., took the survey by phone) and also in how participants responded to the sleep questions based on the format in which they were interviewed.

In summary, we find that, among preschoolers, bedtime-related behaviors tend to be shaped by factors at the caregiver (e.g., maternal race, age, and education) and household level (e.g., income-to-poverty status, number of adults in household, number of bedrooms), and not by child characteristics. Generally speaking the child-level variables (child's age, birth weight, gender) are consistently not predictive of bedtime routines.

Interest in the social determinants of bedtime-related behaviors among children stems from a growing literature on the ways in which cultural and social factors shape sleep schedules, influence sleep quality, and (potentially) impact the prevalence of sleep disorders.[17,34] Among adults, recent analyses of multiple nationally-representative datasets reveal that sleep patterns correspond to social factors such as race/ethnicity, education, employment, and marital status. An implication is that disparities in sleep patterns may contribute to widely observed social

disparities in health.[35-39] Social disparities in bedtime-related routines among children may also have implications for health, school readiness, and behavioral outcomes.

In the short run, differences in sleep behaviors by race, family structure, and socioeconomic status may help explain developmental differences (for example, in health, cognitive, and behavioral domains) among children. In the longer run, differences in children's sleep routines might contribute to sleep habits that are associated with adverse consequences later in life. Previous research indicates that psychosocial functioning and physical health among children and adolescents is associated with inadequate and/or poorly timed sleep.[24,40-43] Recent findings with preschool children suggest that consistency of sleep schedules across the week and weekend may partially account for racial disparities in school readiness.[44] Furthermore, school-age children (age 3-12) and adolescents (ages 10-19 years) who go to bed later have higher a Body Mass Index (BMI) at a 5-year follow up.[14] A recent systematic review and meta-analysis reviewed 17 studies of child sleep duration and found a clear association between sleep duration and weight, independent of other risk factors of obesity.[45] In addition, because sleep is associated with both cognitive function and the capacity to learn, the style in which children are taught to go to sleep may have longer-term implications for performance in school, on cognitive challenges, and self-esteem. Understanding the parent and family characteristics associated with bedtimes and bedtime routines will identify target populations for intervention development and implementation of culturally-sensitive programs to promote sleep and child well-being.

Acknowledgments

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Table 1

Prevalence of bedtime routines

	All Families	Child Has Bedtime	Child Uses Bedtime	Child Has Bedtime Routine	Child Uses Bedtime Routine
Has bedtime	0.812	--	--	0.855	0.857
Uses bedtime	0.673	0.829	--	0.710	0.744
Bedtime is before 8:00[a]	0.042	0.042	0.047	0.043	0.044
Bedtime between 8:00 and 9:00[a]	0.382	0.382	0.385	0.396	0.402
Bedtime between 9:00 and 10:00[a]	0.467	0.467	0.456	0.462	0.454
Bedtime is after 10:00[a]	0.109	0.109	0.112	0.100	0.100
Has any bedtime routine	0.810	0.853	0.855	--	--
Uses any bedtime routine	0.713	0.752	0.788	0.880	--
Routine is interactive with parent	0.600	0.645	0.647	0.740	0.732
Routine is non-interactive	0.260	0.273	0.277	0.321	0.322
Routine is TV	0.111	0.109	0.105	0.137	0.140
Routine is eating	0.150	0.158	0.154	0.185	0.192
Routine is hygiene related	0.584	0.617	0.615	0.721	0.730
Observations	3217	2613	2165	2607	2295

Note: Column proportions presented.

Table 2

Distribution of bedtime routines by key demographic characteristics

	All Families	Has Bedtime	Uses Bedtime	Has Bedtime Routine	Uses Bedtime Routine
Race/Ethnicity:					
Mother is white	0.216	0.826	0.724	0.901	0.832
Mother is Hispanic	0.260	0.784	0.648	0.789	0.691
Mother is Black	0.482	0.815	0.664	0.778	0.669
Mother other race/ethnicity	0.033	0.879	0.682	0.841	0.748
Family Structure:					
Biological father present	0.514	0.796	0.672	0.830	0.738
Single mother	0.390	0.823	0.670	0.782	0.683
Social father present	0.094	0.855	0.694	0.822	0.707
Mother's Education:					
Less than high school	0.336	0.776	0.651	0.755	0.665
High school	0.304	0.822	0.679	0.790	0.691
More than high school	0.359	0.838	0.689	0.880	0.778
Income:					
<=poverty	0.382	0.794	0.659	0.754	0.657
1-2 times poverty	0.299	0.815	0.679	0.806	0.712
>2 times poverty	0.319	0.831	0.684	0.883	0.782
Observations	3217	2613	2165	2607	2295

Note: Row proportions presented.

Table 3

Regression results for predictors of having and using bedtime and bedtime routines

	Has Bedtime	Uses Bedtime	Has Bedtime Routine	Uses Bedtime Routine	Hour of Bedtime
	Logit	Logit	Logit	Logit	OLS
Child Characteristics					
Child is female (vs. male)	1.031	1.049	1.056	1.056	−0.032
Child born low birth weight (vs. not)	0.932	1.041	1.149	0.984	−0.036**
Child's age	1.018	1.018	1.005	1.010	−0.015***
Mother Characteristics					
Mother's age (at child's birth)	1.011	0.999	1.013	1.011	−0.003
Mother is Hispanic (vs. white)	0.846	0.709**	0.742+	0.669**	0.247***
Mother is Black (vs. white)	0.997	0.775*	0.548***	0.531***	0.135**
Mother is of other race (vs. white)	1.659	0.853	0.703	0.694	0.411***
Single mother (vs. bio father present)	1.360**	1.074	0.868	0.889	0.046
Social father present (vs. bio father)	1.839***	1.198	1.237	1.047	−0.061
Mother has <HS ed. (vs. college ed.)	0.729*	0.904	0.679**	0.874	0.083+
Mother has HS ed. (vs. college ed)	0.944	1.000	0.701**	0.843	0.053
Household Characteristics					
Number of adults in HH	0.908+	0.976	0.837***	0.900*	0.010
Number of children in HH	1.028	1.054	0.880***	0.911**	−0.083***
<=poverty (vs. >2× poverty rate)	0.870	0.999	0.743*	0.912	0.052
1 to 2× poverty (vs. >2× poverty rate)	0.958	1.043	0.837	0.992	0.083*
Mother not working (vs. working)	0.987	0.965	1.086	0.977	−0.064+
Mother works part time (vs. working)	0.899	1.003	1.161	1.069	−0.054
Mother's PPVT-R (z-score)[a]	1.048	1.072+	1.075	1.131**	−0.015
Mother's depressive symp. (z-score)	0.929	0.983	1.052	1.062	0.010
Mother took test in Spanish (vs. Eng.)	1.935**	1.303	0.641+	0.692+	0.150+
Number of bedrooms in HH	1.066	1.007	1.277***	1.212***	−0.010
Constant	1.500	1.046	6.072**	2.247	9.361***
Observations	3,217	3,217	3,217	3,217	2,613
R-squared/Pseudo R-squared	0.022	0.012	0.051	0.036	0.068

Note: Odds ratios presented for logistic regressions. Coefficients presented for OLS regression represent the change (in hours) in bedtime that is associated with a one unit change in a given predictor.

***
p<0.001,

**
p<0.01,

*
p<0.05,

+
p<0.10.

[a]PPVT-R refers to Peabody Picture Vocabulary Test-Revised

Table 4

Regression results for predictors of types of bedtimes routines

	Interactive Routines	Non-interactive Routines	TV/Video	Eat/Snack	Hygiene-related Routines
Child Characteristics					
Child is female (vs. male)	0.990	1.116	1.242+	0.993	1.182*
Child born low birth weight (vs. not)	1.009	1.248	1.322+	0.962	1.049
Child's age	1.006	1.011	0.926***	0.968*	0.970**
Mother Characteristics					
Mother's age (at child's birth)	1.021**	1.019*	0.989	1.014	0.996
Mother is Hispanic (vs. white)	0.882	1.009	0.692*	0.856	0.769*
Mother is Black (vs. white)	0.712**	0.722**	0.593***	0.698*	0.726**
Mother is of other race (vs. white)	0.793	0.626+	0.945	0.494*	0.620*
Single mother (vs. bio father present)	0.888	0.920	1.234	1.146	0.946
Social father present (vs. bio father)	0.951	1.274	0.994	1.145	1.179
Mother has <HS ed. (vs. college ed.)	0.742**	0.887	0.726+	0.986	0.712**
Mother has HS ed. (vs. collegeed)	0.704***	0.894	1.184	1.102	0.796*
Household Characteristics					
Number of adults in HH	0.880**	0.910+	1.092	1.019	0.877**
Number of children in HH	0.890***	0.968	0.918+	1.007	0.956
<=poverty (vs. >2× poverty rate)	0.662***	0.904	1.084	1.218	0.784*
1 to 2× poverty (vs. >2× poverty rate)	0.744**	0.883	1.158	1.163	0.893
Mother not working (vs. working)	1.026	1.221*	0.629***	0.963	0.812*
Mother works part time (vs. working)	1.225+	1.342*	0.777	1.114	0.897
Mother's PPVT -R (z-score)[a]	1.119**	1.139**	0.819**	1.020	1.162***
Mother's depressive symp. (z-score)	1.025	1.074+	1.102+	0.992	1.030
Mother took test in Spanish (vs. Eng.)	0.836	0.457***	0.551	0.405**	0.389***
Number of bedrooms in HH	1.152**	1.000	1.205**	1.086	1.154**
Constant	1.574	0.241*	2.809	0.409	10.638***
Observations	3,217	3,217	3,217	3,217	3,217
R-squared/Pseudo R-squared	0.056	0.028	0.046	0.022	0.051

Note: Odds ratios presented for logistic regressions. Bedtime routine categories are not mutually exclusive.

***
p<0.001,

**
p<0.01,

*
p<0.05,

+
p<.10.

[a] PPVT-R refers to Peabody Picture Vocabulary Test-Revised