Mother-Child Bed-sharing in Toddlerhood and Cognitive and Behavioral Outcomes

OBJECTIVE: We examined the predictors and consequences of mother-child bed-sharing at 1, 2, and 3 years of age in a racially/ethnically and geographically diverse sample of low-income families across the United States.

METHODS: We analyzed data from 944 low-income families who had children assessed at 1, 2, 3, and 5 years of age.

RESULTS: Mothers who were Hispanic and black were more likely to bed-share with children at ages 1, 2, and 3 years than other mothers. Maternal negative regard also predicted bed-sharing. Bed-sharing at ages 1 to 3 years was bivariately associated with poorer behavior and cognition at age 5 years. However, these associations lost significance when child and mother characteristics were controlled.

CONCLUSION: There seem to be no negative associations between bed-sharing in toddlerhood and children’s behavior and cognition at age 5 years. Pediatrics 2011;128:e339–e347
Although bed-sharing, a type of cosleeping in which parents and children sleep in the same bed,1–3 is a customary sleeping arrangement for children in many countries and cultures,2 it remains relatively uncommon in the United States.4,5 Ambivalence toward bed-sharing in the United States may be due in part to different messages about its risks and benefits. A study of 40 US parenting books on sleep, for example, found that while bed-sharing was endorsed in 28% of the books, it was opposed by 40%.5 The remaining 32% of books abstained from taking a position on bed-sharing. Proponents of bed-sharing argue that it facilitates breastfeeding,6,7 encourages bonding between a mother and her child,8 and regulates infant breathing.9 Yet the American Academy of Pediatrics recommends against bed-sharing during infancy, citing epidemiologic evidence that bed-sharing increases the risk of sudden infant death syndrome under certain conditions (ie, if the mother smokes or is overtired; if the child is younger than 11 weeks).10 Furthermore, bed-sharing has been found to exacerbate sleep problems in children in addition to distress among parents.1,11,12 Notably, advice (in favor or against bed-sharing) depends on the age of the child. This study examines bed-sharing at 1 to 3 years of age, when a child is no longer at risk for sudden infant death syndrome.

Little is known about the potential developmental consequences of bed-sharing for toddlers and older children in the United States, where bed-sharing is not the norm.4 Most studies with US samples have examined sleep problems rather than indicators of cognitive and behavioral development as outcomes. To our knowledge, only 2 longitudinal studies with US families13,14 have examined the influence of bed-sharing on later cognition or behavior. The first study (N = 330) found no association between bed-sharing at age 2 years and emotional or behavioral problems 1 year later in a community sample.13 However, a significant proportion of the families with low socioeconomic status (SES) in that study were lost at follow-up. The second study (N = 205) also found no association between bed-sharing infancy and early childhood (3, 4, and 5 years) and child behavior at age 6 years.14 Interestingly, higher cognitive competence scores were found among bed-sharers. However, that sample consisted of relatively well-educated non-Hispanic white families, of which only 6% reported regularly sharing a bed. Given its homogenous sample with a small percentage of bed-sharers, this study has limited generalizability, as black and Hispanic American families are more likely than non-Hispanic white families to practice bed-sharing.12,15 Because bed-sharing is also more common among lower-SES families in the United States,15,16 there is a need to examine whether bed-sharing poses an additional risk for the cognitive and behavioral outcomes of children already at risk.17,18

This study examined the predictors and consequences of mother-child bed-sharing at 1, 2, and 3 years of age in a racially/ethnically and geographically diverse sample of low-income families across the United States. We began by categorizing families according to how often they reported bed-sharing at these 3 time points (never, 1 time point only, and 2–3 time points), and then predicted membership in these categories based on family sociodemographic characteristics, observed maternal parenting behaviors, and maternal depressive symptoms. These predictors were selected based on past studies identifying child age, parental education, SES, the number of children in the home, maternal depressive symptoms, and single parent status as correlates of bed-sharing.1,19–22 We also included maternal parenting behaviors (supportiveness, negative regard, and detachment) that may be associated with bed-sharing. Associations between bed-sharing across ages 1 through 3 years and a range of cognitive and behavioral outcomes at age 5 years were then examined. When bivariate associations were found, multivariate models of those outcomes were used to test whether bed-sharing remains predictive when demographic characteristics, maternal depressive symptoms, and maternal parenting behaviors are controlled.

On the basis of previous studies,12,13 we expect that bed-sharing will be less prevalent among non-Hispanic whites compared with blacks and Hispanics. We also expect that maternal education will be negatively associated with bed-sharing, and that maternal depressive symptoms will be positively associated with bed-sharing.21,22 We expect bed-sharing to be bivariately inversely associated with cognitive and behavioral outcomes owing to the higher prevalence of bed-sharing among lower SES and racial and ethnic minority families. Furthermore, we expect to find associations between bed-sharing and poorer cognitive and behavioral outcomes, even in a multivariate context. Although past research has failed to find such associations,12,14 bed-sharing is associated with sleep problems, which are themselves associated with behavior and cognitive problems.23–25 Past studies may have lacked the statistical power necessary to detect associations between bed-sharing and behavior. The large number of bed-sharers in our sample should offer greater statistical power than was available in past studies.
METHODS

Participants

This study used data from the Early Head Start (EHS) Research and Evaluation Study, an evaluation of the EHS program that began when the program was authorized in 1996. The study was conducted at 17 EHS programs across the country selected for their geographic and programmatic diversity.26 Families with incomes at or below the poverty level, with at least 1 child younger than 12 months, were recruited for the study. Of the 3001 families who participated in the evaluation, half were randomly assigned to the program group, which received EHS services, and half were assigned to the control group, in which families were free to obtain services elsewhere. Families were visited at home when children turned 1, 2, and 3 years old, and again when they turned 5 years, 2 years after the end of EHS services for children in the program group. At the 1-, 2-, and 3-year home visits, mothers reported on family demographic characteristics, child health, child care, maternal mental health, and family routines, including sleep arrangements. Child cognitive and behavioral outcomes were assessed at age 5 years, before kindergarten entrance. The response rate was 75% for the age 1-year time point, 72% for the age 2-year time point, 70% for the age 3-year time point, and 69% for the age 5-year time point.27

Our sample is limited to respondents who provided information on their sleeping arrangements at ages 1, 2, and 3 years and who had no missing data on demographic and parenting variables of interest (n = 944). Subject numbers in the models of age 5-year outcomes vary according to the number of valid values per outcome. Compared with the full sample, our analytic sample differs somewhat in the percentage of mothers who have more than a high school education (full: 23%; analytic: 26%; P < .05). Our analytic sample also has fewer teen aged mothers compared with the full sample (full: 38%; analytic: 35%; P < .05). However, our study sample is similar to the full sample in terms of child gender, poverty status, ethnicity, mother’s nativity status, and low birth weight.

Measures

Demographic variables were all collected at enrollment. The parenting and maternal depression variables in our analyses are from the 1-year home visit. Bed-sharing was assessed at the 1-, 2-, and 3-year home visits in the same manner at each visit. Child cognitive and behavioral outcomes were collected at the 5-year home visit. These variables are described below.

Bed-Sharing

At the 1-, 2-, and 3-year home visits, mothers were asked, “Does [child] have a regular place where [he/she] usually sleeps at night?” Mothers who answered “yes” were then asked where the child usually sleeps. Consistent with previous definitions of bed-sharing,13–15 respondents who indicated that the child usually slept “with parent, in bed” were coded as bed-sharers. A summary variable was then created to reflect whether respondents never bed-shared (52%), bed-shared at any 1 time point only (22%), or bed-shared at 2 or 3 time points.

TABLE 1  EHS Sample Characteristics (N = 944)

<table>
<thead>
<tr>
<th>Bed-share, %a</th>
<th>52.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never bed-share</td>
<td>52.0</td>
</tr>
<tr>
<td>Bed-share at 1 time point only</td>
<td>21.9</td>
</tr>
<tr>
<td>Bed-share at ≥2 time points</td>
<td>26.1</td>
</tr>
<tr>
<td>Child characteristics, %</td>
<td></td>
</tr>
<tr>
<td>EHS program group</td>
<td>53.5</td>
</tr>
<tr>
<td>Control group</td>
<td>46.5</td>
</tr>
<tr>
<td>Female</td>
<td>47.2</td>
</tr>
<tr>
<td>Male</td>
<td>52.8</td>
</tr>
<tr>
<td>Low birth weight (&lt;2500 g) child</td>
<td>7.5</td>
</tr>
<tr>
<td>Maternal ethnicity, %</td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic white</td>
<td>38.2</td>
</tr>
<tr>
<td>Hispanic</td>
<td>25.2</td>
</tr>
<tr>
<td>Black</td>
<td>30.9</td>
</tr>
<tr>
<td>Other</td>
<td>4.2</td>
</tr>
<tr>
<td>Mother is US born, %</td>
<td>81.9</td>
</tr>
<tr>
<td>Mother was teenager when child was born, %</td>
<td>35.2</td>
</tr>
<tr>
<td>Socioeconomic characteristics</td>
<td></td>
</tr>
<tr>
<td>Below poverty level, %</td>
<td>73.0</td>
</tr>
<tr>
<td>Adult male head of household, %</td>
<td>43.8</td>
</tr>
<tr>
<td>No. of children in household, mean (SD)</td>
<td>2.04 (1.54)</td>
</tr>
<tr>
<td>Mother’s education, %</td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>10.0</td>
</tr>
<tr>
<td>Some high school</td>
<td>31.4</td>
</tr>
<tr>
<td>High school graduate only/GED</td>
<td>28.5</td>
</tr>
<tr>
<td>More than high school</td>
<td>26.4</td>
</tr>
<tr>
<td>Mothering characteristics, mean (SD)</td>
<td></td>
</tr>
<tr>
<td>Mother detachmentb,c</td>
<td>1.55 (0.96)</td>
</tr>
<tr>
<td>Mother negative regardb,d</td>
<td>1.41 (0.75)</td>
</tr>
<tr>
<td>Mother supportivenessb,d</td>
<td>4.01 (1.06)</td>
</tr>
<tr>
<td>Mother’s depressive symptoms, mean (SD)c,e</td>
<td>12.50 (9.35)</td>
</tr>
</tbody>
</table>

GED indicates General Educational Development Test.

a Measured at 1, 2, and 3 years when child was 1, 2, and 3 years of age.
b Measured at the 1-year home visit.
c Range: 1 to 6.
d Range 1 to 7.
e Mothers indicated the frequency of each symptom over the previous week on a 4-point scale (0 rarely, 3 most of the time); scores for the current sample ranged from 0 to 56.
We distinguished bed-sharing at only 1 time point from that at ≥2 time points to test whether their predictors and sequelae diverged.

Cognitive Outcomes

Children’s math achievement was measured using the Woodcock-Johnson Revised Tests of Achievement28 applied problems subtest. The letter-word identification subtest assessed early literacy skills.28 All measures were age-standardized against a national norming sample (mean: 100 [SD: 15]). In the present sample, the mean of the applied problems subtest was 88 (SD: 21) and the mean of the letter-word identification subtest was 89 (SD: 14).

Behavioral Outcomes

Children’s hyperactivity and social skills were measured with scales drawn from the Head Start Family and Child Experiences Survey.29 Mothers indicated the extent to which each item described their child’s behavior on a 3-point scale (0 = not at all true, 3 = very true), and items were then summed. The hyperactivity scale (mean: 1.76 [SD: 1.47]) included 3 items such as “Can’t concentrate, can’t pay attention for long.” The social skills scale is a 20-item self-report symptom rating scale used to measure depressive symptoms. Mothers indicated the frequency of each symptom over the past week on a 4-point scale (0 = rarely, 3 = most of the time). Scores range from 0 to 60, with higher scores indicating increased symptoms. Scores for the current sample ranged from 0 to 56 (mean: 12.5 [SD: 9.3]).

Maternal Depressive Symptoms

The Center for Epidemiologic Studies Depression Scale44 was completed by mothers at the 1-year home visit. This scale is a 20-item self-report symptom rating scale used to measure depressive symptoms. Mothers indicated the frequency of each symptom over the past week on a 4-point scale (0 = rarely, 3 = most of the time). Scores range from 0 to 60, with higher scores indicating increased symptoms. Scores for the current sample ranged from 0 to 56 (mean: 12.5 [SD: 9.3]).

Additional Explanatory Variables

Characteristics as of baseline were selected as additional explanatory variables based on past literature linking them to both bed-sharing and children’s behavioral and cognitive outcomes. Program status (1 = EHS, 0 = control), US nativity status (1 = mother is US born, child’s gender (1 = female), presence of an adult male head of household (1 = yes), and poverty status (1 = below poverty level) were coded dichotomously. A continuous measure of the number of children in the household was also included.

Categorical measures of mother’s ethnicity (white non-Hispanic; black non-Hispanic; Hispanic; and other) and education level (less than high school, high school/General Educational Develop-
Results

Demographic and descriptive information on the sample is reported in Table 1. Approximately half of the children were female (47%). Of the 944 mothers in our sample, 31% identified as black, 25% as Hispanic, 38% as white non-Hispanic, and 4% as other. Most of the sample was born in the United States \((n = 773)\). Of the 171 mothers who indicated they were foreign born, 134 (78%) were Hispanic. By design, this sample was poor, with 73% of the families \((n = 689)\) living below the poverty line.

<table>
<thead>
<tr>
<th>TABLE 3</th>
<th>Bed-Sharing at Different Time Points and Mean (SD) Differences in Age 5 Years Outcomes: EHS Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Never Bed-Share</strong></td>
</tr>
<tr>
<td><strong>Behavioral outcomes</strong></td>
<td></td>
</tr>
<tr>
<td>Social skills</td>
<td>12.10 (1.83)(^a)</td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>1.71 (1.49)(^a)</td>
</tr>
<tr>
<td><strong>Cognitive outcomes</strong></td>
<td></td>
</tr>
<tr>
<td>Letter-word identification</td>
<td>90.80 (13.26)(^a)</td>
</tr>
<tr>
<td>Applied problems</td>
<td>90.25 (20.80)(^a)</td>
</tr>
</tbody>
</table>

\(^{a}\) Values that do not share a common superscript across rows differ from each other significantly at the .05 level.

\(^{b}\) Mean is significantly different from “never” at the .05 level.

\(^{c}\) \(P < .05\).

\(^{d}\) \(P < .01\).

<table>
<thead>
<tr>
<th>TABLE 4</th>
<th>Nested Ordinary Least Squares Regression Results for Predictors of Age 5 Years Social Skills: EHS Sample ((N = 823))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Model 1</strong></td>
</tr>
<tr>
<td>Bed-share</td>
<td></td>
</tr>
<tr>
<td>1 time point only</td>
<td>(-0.33 (0.17)(^a))</td>
</tr>
<tr>
<td>(\geq 2) time points</td>
<td>(-0.41 (0.17)(^b))</td>
</tr>
<tr>
<td>Child characteristics</td>
<td></td>
</tr>
<tr>
<td>EHS treatment group</td>
<td>—</td>
</tr>
<tr>
<td>Child is female</td>
<td>—</td>
</tr>
<tr>
<td>Low birth weight</td>
<td>—</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>Mother is Hispanic(^a)</td>
<td>—</td>
</tr>
<tr>
<td>Mother is black(^a)</td>
<td>—</td>
</tr>
<tr>
<td>Mother is other ethnicity(^a)</td>
<td>—</td>
</tr>
<tr>
<td>Mother is US born</td>
<td>—</td>
</tr>
<tr>
<td>Socioeconomic characteristics</td>
<td></td>
</tr>
<tr>
<td>Below poverty level(^f)</td>
<td>—</td>
</tr>
<tr>
<td>Male head of household</td>
<td>—</td>
</tr>
<tr>
<td>No. of children in family</td>
<td>—</td>
</tr>
<tr>
<td>Maternal education</td>
<td></td>
</tr>
<tr>
<td>Less than high school(^a)</td>
<td>—</td>
</tr>
<tr>
<td>Some high school(^a)</td>
<td>—</td>
</tr>
<tr>
<td>More than high school(^a)</td>
<td>—</td>
</tr>
<tr>
<td>Parenting behaviors at 1 y</td>
<td></td>
</tr>
<tr>
<td>Mother’s detachment</td>
<td>—</td>
</tr>
<tr>
<td>Mother’s negative regard</td>
<td>—</td>
</tr>
<tr>
<td>Mother’s supportiveness</td>
<td>—</td>
</tr>
<tr>
<td>Mother’s depressive symptoms</td>
<td>—</td>
</tr>
<tr>
<td>Constant</td>
<td>12.10(^c)</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Values are given as \(\beta\) (SE). — indicates that association was not tested as part of the model.

\(^{a}\) \(P < .10\).

\(^{b}\) \(P < .05\).

\(^{c}\) \(P < .001\).

\(^{d}\) \(P < .01\).

\(^{e}\) The reference category is white, non-Hispanic.

\(^{f}\) The reference category is high school graduate.
line. Forty-one percent of the mothers in this sample did not graduate from high school (n = 390), and more than one-third of mothers were teenagers when their child was born (n = 332). Nearly half (48%) of the families in this sample indicated they had shared their bed at least at 1 time point. Specifically, at age 1 year, 30% of families bed-shared; at age 2 years, 26% of families bed-shared; and at age 3 years, 21% of families bed-shared.

As shown in Table 2, ethnicity and parenting were the only characteristics that significantly predicted bed-sharing at 1 time point and at ≥2 time points in a multivariate context. Specifically, blacks (odds ratio [OR]: 2.64, P < .001) and Hispanics (OR: 1.81; P < .05) were more likely than non-Hispanic whites to bed-share at 1 time point. Hispanics (OR: 3.94; P < .05) were more likely than non-Hispanic whites to bed-share at 1 time point. Hispanics to bed-share at 1 time point had 2 time points. No other characteristics or maternal behaviors were associated with the odds of bed-sharing at the P < .05 level of significance.

Bed-sharing was bivariately associated with only 1 of our 2 behavioral outcomes at age 5 years. As Table 3 shows, bed-sharing was significantly associated with children’s social skills (F2,822 = 3.77; P = .02). Specifically, children who bed-shared at ≥1 time point had significantly lower mean scores on social skills than children who never bed-shared (11.68 vs 12.10). There were no significant differences on mean hyperactivity scores according to bed-sharing.

Bed-sharing was significantly associated with both cognitive outcomes at age 5 years (Table 3). Children who bed-shared at ≥2 time points had lower mean scores (F2,718 = 6.32; P = .002) on letter-word identification than children who never bed-shared (86.75 vs 90.80). Children who bed-shared also had significantly lower scores on applied problems compared with children who never bed-shared (F2,716 = 7.46; P = .002). Specifically, children who bed-shared at only 1 time point (mean: 85.53) and children who bed-shared at ≥2 time points (mean: 83.39) had lower mean scores compared with children who never bed-shared (mean: 90.25).

To assess whether bed-sharers’ lower scores on social skills and both the cognitive outcomes were in fact due to bed-sharing—and not ethnicity or parenting, which were associated with bed-sharing—we ran 4 nested regression models for each outcome. The negative association between bed-sharing and social skills was no longer significant once controls for child gender, low birth weight, EHS program participation, ethnicity, and mother’s nativity status were added in model 2 (Table 4). The negative association between bed-sharing and letter-word identification remained significant after adding these controls. However, once socioeconomic characteristics and maternal education were accounted for in model 3, the association between bed-sharing at 1 time point and letter-word identification (Table 5) was no longer significant. Inclusion of

<table>
<thead>
<tr>
<th>TABLE 5 Nested Ordinary Least Squares Regression Results for Predictors of Age 5 Years Letter-Word Identification: EHS Sample (W = 719)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Model 1</td>
</tr>
<tr>
<td>Model 2</td>
</tr>
<tr>
<td>Model 3</td>
</tr>
<tr>
<td>Model 4</td>
</tr>
</tbody>
</table>

Values are given as % (SE). — indicates that association was not tested as part of the model.

a P < .05.

b P < .10.

c P < .01.

d P < .001.

The reference category is non-Hispanic white.

The reference category is high school graduate.
The findings from this study suggest that there is no association between bed-sharing between the ages of 1 and 3 years and cognitive and behavioral outcomes at 5 years of age. Bivariate negative association between bed-sharing and social skills, as well as bed-sharing and applied problems, lost significance once we controlled for gender, EHS program participation, ethnicity, and mother's nativity status. The negative association between bed-sharing and letter-word identification was attributable to the socioeconomic characteristics, maternal education, and mothering practices of those who bed-shared, rather than bed-sharing itself. The negative bivariate associations we found between bed-sharing and cognitive outcomes conflict with the positive association of Okami et al.14 between bed-sharing (between the ages of 5 months to 6 years) and cognitive competence. However, the authors lacked an explanation for that finding and acknowledged that it may have been due to chance. Our finding of a null association between bed-sharing and behavioral outcomes is consistent with findings from a previous study of 2- and 3-year-olds.15 We extend this literature by using a larger, more ethnically diverse sample of children from across the United States, with a much larger percentage of bed-sharers.

There are several limitations to this study. First, our measure of bed-sharing was reported once each year at child ages 1, 2, and 3 years. It is unknown whether mothers’ reports reflected regular bed-sharing or temporary arrangements around the time of the home visit. Second, this study did not ask mothers about their reasons for bed-sharing at ages 1, 2, or 3 years. For example, some mothers may freely choose to bed-share, while others may do so out of necessity because of household crowding.

**DISCUSSION**

Consistent with previous literature, our study found that blacks and Hispanics in the United States are more likely to bed-share than non-Hispanic whites. In contrast to previous studies, we did not find an association between maternal depressive symptoms and bed-sharing, which may be because studies that have found an association between maternal mood and bed-sharing have generally focused on younger children’s sleep (ie, those aged 0–24 months) and maternal mood closer to the postpartum period.22,23 whereas our study examined bed-sharing between the ages of 1 and 3 years.

**TABLE 6** Nested Ordinary Least Squares Regression Results for Predictors of Age 5 Years Applied Problems: EHS Sample (W = 718)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>β</td>
<td>β</td>
<td>β</td>
</tr>
<tr>
<td>Bed-share</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 time point only</td>
<td>-4.72 (1.87)*</td>
<td>-2.13 (1.93)</td>
<td>-1.29 (1.90)</td>
<td>-0.50 (1.87)</td>
</tr>
<tr>
<td>≥2 time points</td>
<td>-6.86 (1.89)*</td>
<td>-4.30 (1.88)*</td>
<td>-2.76 (1.86)</td>
<td>-1.76 (1.83)</td>
</tr>
<tr>
<td>Child characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EHS treatment group</td>
<td>—</td>
<td>4.10 (1.50)*</td>
<td>4.41 (1.47)*</td>
<td>4.24 (1.45)*</td>
</tr>
<tr>
<td>Child is female</td>
<td>—</td>
<td>4.39 (1.50)*</td>
<td>4.44 (1.48)*</td>
<td>3.15 (1.47)*</td>
</tr>
<tr>
<td>Low birth weight</td>
<td>—</td>
<td>-8.21 (2.83)*</td>
<td>-7.20 (2.78)*</td>
<td>-8.75 (2.72)*</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother is Hispanic*</td>
<td>—</td>
<td>-8.03 (2.27)*</td>
<td>-6.21 (2.30)*</td>
<td>-5.44 (2.27)*</td>
</tr>
<tr>
<td>Mother is black*</td>
<td>—</td>
<td>-5.80 (1.85)*</td>
<td>-4.61 (1.86)*</td>
<td>-2.34 (1.93)</td>
</tr>
<tr>
<td>Mother is other ethnicity*</td>
<td>—</td>
<td>-1.78 (3.88)</td>
<td>-3.11 (3.81)</td>
<td>-3.62 (3.73)</td>
</tr>
<tr>
<td>Mother is US born</td>
<td>—</td>
<td>9.12 (2.48)*</td>
<td>7.03 (2.56)*</td>
<td>6.64 (2.52)*</td>
</tr>
<tr>
<td>Socioeconomic characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below poverty level*</td>
<td>—</td>
<td>—</td>
<td>-1.67 (2.25)</td>
<td>-1.48 (2.21)</td>
</tr>
<tr>
<td>Male head of household</td>
<td>—</td>
<td>—</td>
<td>4.83 (1.57)*</td>
<td>4.62 (1.54)*</td>
</tr>
<tr>
<td>No. of children</td>
<td>—</td>
<td>—</td>
<td>-1.15 (0.65)*</td>
<td>-0.72 (0.64)</td>
</tr>
<tr>
<td>Maternal education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school*</td>
<td>—</td>
<td>—</td>
<td>-5.55 (3.18)*</td>
<td>-4.36 (3.12)</td>
</tr>
<tr>
<td>Some high school*</td>
<td>—</td>
<td>—</td>
<td>-0.04 (1.84)</td>
<td>0.73 (1.81)</td>
</tr>
<tr>
<td>More than high school*</td>
<td>—</td>
<td>—</td>
<td>7.59 (1.96)*</td>
<td>5.77 (1.95)*</td>
</tr>
<tr>
<td>Mothering behaviors at 1 y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother’s detachment</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.23 (0.91)</td>
</tr>
<tr>
<td>Mother’s negative regard</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>-1.17 (1.05)</td>
</tr>
<tr>
<td>Mother’s supportiveness</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>4.15 (0.95)*</td>
</tr>
<tr>
<td>Mother’s depressive symptoms</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>-0.20 (0.08)*</td>
</tr>
<tr>
<td>Constant</td>
<td>90.25*</td>
<td>81.24*</td>
<td>81.74*</td>
<td>66.20*</td>
</tr>
<tr>
<td>R²</td>
<td>0.02</td>
<td>0.11</td>
<td>0.16</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Values are given as β (SE). — indicates that association was not tested as part of the model.

* P < .05.
* P < .01.
* P < .001.
* The reference category is white, non-Hispanic.
* The reference category is ≥100%.
* The reference category is high school graduate.

mothering characteristics and maternal depressive symptoms in model 4 rendered the association between bed-sharing at 2 time points and letter-word identification insignificant. The association between bed-sharing and applied problems was no longer significant once controls for child gender, low birth weight, EHS program participation, ethnicity, mother’s nativity status, socioeconomic characteristics, and maternal education were added in model 3 (Table 6). Although not shown in our tables, we also tested for the possibility of moderated associations by nativity status (Hispanic × US born) and EHS participation (EHS participation × bed-sharing “dose”). We found no support for such effects.
Some research suggests that the outcomes of bed-sharing may depend on whether mothers choose to bed-share or whether bed-sharing occurs in reaction to a child’s sleep problems. Unfortunately, the present study did not capture that information, because it was not explicitly designed to study sleep habits. Future longitudinal research is needed to test whether associations between bed-sharing in toddlerhood and child behavior and cognition in preschool vary according to the reason for bed-sharing, maternal satisfaction with sleeping arrangement, and the quality of both the child’s and the mother’s sleep. The age of our data also highlight the need for more recent data collection on this understudied topic.

CONCLUSION

These findings suggest that the negative association between bed-sharing between the ages of 1 and 3 years and later behavioral and cognitive outcomes is likely not due to bed-sharing itself but rather to the sociodemographic characteristics of those who are more likely to bed-share.

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