Maternal characteristics and behavioral/emotional problems in preschoolers: how they relate to sleep rhythmic movements at sleep onset

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No conflict of interest.

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CL did the literature review, the statistical analyses and wrote the first draft of the manuscript. She was also responsible to integrate comments from other contributors into the final manuscript. HG assisted the first author in the design of the study and the revision of the manuscript. IP made recommendations and assisted the first author in statistical analyses. LA revised the manuscript. MM is the principal investigator of the MAVAN study and provided financial support to complete this project. He also revised the manuscript. MHP revised the manuscript and participated in statistical analyses. All authors contributed to the manuscript and approved the final version.

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Summary

Sleep rhythmic movements (SRM) have been speculated to be a form of self-soothing. While this sleep-related movement has been associated with lower socioeconomic status, psychopathologies and maternal characteristics, prospective studies with sizable sample and objective measurements are lacking. Objectives were (1) to identify maternal characteristics predicting SRM in children; and (2) to document behavioral/emotional problems in preschoolers with SRM. Participants were mother-child dyads (N=529) from the Maternal Adversity Vulnerability and Neurodevelopment (MAVAN) cohort. Questionnaires evaluating socioeconomic status (SES, prenatal), maternal depressive symptoms (prenatal, 48 months), SRM (12, 18, 24, 36, 48 months), maternal anxiety trait (24 months) and children’s behavioral/emotional problems (48 months) were used. Maternal sensitivity (is accuracy and appropriateness of mother’s responses her baby’s needs) was assessed objectively with a filmed mother-infant interaction (6 months). Generalized estimating equation was used to investigate associations between SRM and maternal characteristics (depression, anxiety and sensitivity). Linear regressions were used to assess associations between SRM and behavioral/emotional problems in children. Maternal sensitivity, maternal depressive symptoms and SES predicted SRM in children (p<.05). SRM was found to be associated with internalizing problems (p<.05). To our knowledge, this is the first study showing that SRM are associated with lower maternal sensitivity, measured objectively. This study also builds on previous reports, by documenting an association between SRM and behavioral/emotional problems even in preschoolers. The presence of psychosocial factors in SRM etiology should be considered in treatment.

Keywords

• Emotional problems
• Behavioral problems
• Sleep rhythmic movements
• Body rocking
• Children
• Psychosocial factors
Parasomnias and sleep-related movement disorders are undesirable behavioral or motor disorders a person experiences while falling asleep, sleeping or waking up (American Academy of Sleep Medicine, 2014). The prevalence of parasomnias and of some sleep-related movement disorders is particularly high during childhood, even in nonclinical populations. For instance, in a study conducted on a normative population of 1997 children aged between 2.5 and 6 years old, somniloquy has been reported in 84.4% of children, sleep terrors in 39.8% and bruxism in 45.6% (Petit et al., 2007). Although it is not rare that adults experience somniloquy, bruxism and somnambulism; night terrors, enuresis and sleep rhythmic movements (SRM) usually have their onset during childhood and are resorbed before the teenage years (Laberge et al., 2000).

SRM mainly consists in three types of movements: head-banging, head-rolling and body rocking. (American Academy of Sleep Medicine, 2014). SRM is often benign and does not require a diagnosis of sleep-related rhythmic movements disorder (RMD) unless they result in daytime functioning or sleep impairments, or injuries (American Academy of Sleep Medicine, 2014). Historically, RMD was classified in the Parasomnia category of the ISCD(American Academy of Sleep Medicine, 2001). However, since 2005, RMD in included in the Sleep-Related Movement Disorders category(American Academy of Sleep Medicine, 2005). Although polysomnographic recordings show that SRM can be present in both Rapid-Eye-Movement (REM) sleep and non-Rapid-Eye-Movement (NREM) sleep, SRM occur most frequently at sleep onset (American Academy of Sleep Medicine, 2014, Chiaro et al., 2017, Kohyama et al., 2002, Manni et al., 2004). The prevalence of SRM has been reported to be 5.5% at 2.5 years, but then decreases to only 2% at 6 years old in otherwise healthy children (Petit et al., 2007). This
behavior mostly occurs during infancy and toddlerhood and little is known about its etiology and related outcomes (Gwyther et al., 2017, American Academy of Sleep Medicine, 2014).

Certain aspects of children’s mental health have been linked to SRM. Laberge et al. (2000) found an association between a previous history of body rocking and anxiety at 11 years old. Attention deficit hyperactivity disorder (ADHD) has been reported in 42.9% to 60% of children with SRM in two small samples (n=7, n=10) (Walters et al., 2008). In a group of 24 adolescents and adults with SRM (11-67 years old), comorbidity with various psychopathologies was found in 20.8% of the sample (Mayer et al., 2007). Again, the sample size was rather small and the comorbid psychopathologies reported were quite diverse, including personality disorder, depression, ADHD and history of drug addiction (Mayer et al., 2007). Taken together, these results suggest that SRM might be associated with attention problems, hyperactivity, anxiety and depressive symptoms. Nevertheless, studies conducted on larger normative cohorts are needed to confirm a link between SRM and psychopathologies or behavioral problems.

Some authors have speculated that SRM is a self-soothing behavior (Petit et al., 2007, Thorpy and Golvinsky, 1987). Preliminary results showed that children who experienced at least three of the following symptoms of sleep disorders: nightmares, sleep terrors, sleepwalking, bruxism, and body rocking had mothers presenting higher levels of anxiety and depressive symptoms than children without these symptoms (Pennestri et al., 2015). Authors have also reported an association between body rocking in children and higher maternal depression, as well as with lower socioeconomic status (SES) (Petit et al., 2007). Another study found no association between body rocking and
family adversity as defined by parental occupation, education, mother’s age, as well as family structure (Laberge et al., 2000). It is possible that other environmental or social adversity factors are related to SRM. These few studies suggest that SRM could represent a self-soothing method that might be related to adversity and to different maternal characteristics. However, these studies all used questionnaires to document maternal characteristics, capturing the mother’s perspective. To our knowledge, no study used filmed mother-child interactions to objectively describe maternal behavior or sensitivity in association with SRM, as well as investigating simultaneously maternal characteristics and behavioral/emotional problems in children.

**Aims**

This study aims to (1) determine whether specific maternal characteristics (depression, anxiety and sensitivity) are associated with the presence of SRM in children; and (2) investigate if the presence of SRM in toddlerhood is linked to children’s behavioral/emotional problems at 48 months.

**Methods**

**Participants**

This study is part of the Maternal Adversity Vulnerability and Neurodevelopment (MAVAN) project. Pregnant women were recruited in obstetric clinics of Montreal, Quebec and Hamilton, Ontario. Mothers with serious obstetric complication, chronic illness, congenital disease or other serious health condition were not included in the study. Babies were excluded if they had severe birth complications or other serious medical conditions; if they were premature (< 37 weeks of gestation); or if they had a
very low birth weight (< 2kg). Mothers also had to be 18 years or older and be fluent in either English or French. The MAVAN study was approved by the ethic committees of the Douglas Mental Health University Institute (Montreal, Quebec) and the St-Joseph Healthcare/McMaster University (Hamilton, Ontario). Written consent was obtained from all participants. A total of 529 dyads (39.1% from Hamilton) were included in the analyses of this project. Data collection was made during home and laboratory visits by research assistants who received proper training for all assessments.

**Measures**

**Sleep-related behaviors**

An adapted version of the Self-Administered Questionnaire from the Mother (Petit et al., 2002) referred to as the Questionnaire about Sleep Habits (QASH) was completed by the mother when the child was 12, 18, 24, and 36 months old. The question assessing SRM was: “Just before falling asleep, does your child rock her/his body repetitively?” This question focuses on body rocking movements, which are a typical representation of SRM. The choices of answer were: “No”, “Sometimes”, “Often”, “Every night”, “Don’t know”. As in Petit et al. (2007), all children who rocked their body at least sometimes were considered as presenting SRM (i.e. “Sometimes”, “Often” or “Every night”).

The Children’s Sleep Habits Questionnaire (CSHQ) was completed by the mother when the child was 48 months old (Goodlin-Jones et al., 2008). The item assessing SRM was: “Child falls asleep with rocking or rhythmic movements”, which is more inclusive than the question in the QASH (including all types of rhythmic movements the parent might notice). Children were considered as presenting SRM when
mothers answered “Sometimes (2-4 time per week)” or “Usually (5-7 times per week)”; whereas they were considered as not presenting SRM when mothers answered “Rarely (0-1 time per week)”.

Children’s behavioral/emotional problems

The Child Behavior Checklist (CBCL) was completed by the mother when the child was 48 months old (Achenbach and Rescorla, 2000). This questionnaire is widely used both in research and in clinical settings to assess behavioral/emotional problems in children. It comprises 99 statements about the child, to which the parent has to report using a Likert scale if the statement is “not true”, “somewhat or sometimes true” or “very true or often true”. The internalizing problems and externalizing problems scales provided in the manual were used.

Maternal depression, anxiety and sensibility

The Center for Epidemiologic Studies Depression scale (CES-D) was completed by the mother during her pregnancy and when her child was 48 months old (Radloff, 1977). The instrument contains 20 items and the mother had to rate how often she experienced the symptoms during the previous two weeks. The frequency scale used in the questionnaire is: 0 = Rarely or None of the Time, 1 = Some or Little of the Time, 2 = Moderately or Much of the time, 3 = Most or Almost All the Time. A total score is obtained by summing all of the answers and is ranging between 0 and 60, a higher number indicating more depressive symptoms.

The State Trait Anxiety Inventory (Spielberger et al., 1983, Spielberger et al., 1970) was used to measure anxiety trait in mother when their child was 24 months old. It is a self-report tool designed to distinguish between state and trait anxiety by using two
independent, 20-item unidimensional scales. The Trait-Anxiety Scale (T-Anxiety), a measure of general anxiety tendency, was used. It is designed to be more stable across time than the State-Anxiety scale. Scores range from 20 to 80 and a higher score is indicative of a higher level of anxiety tendency.

The Maternal Behavior Q-Sort short version (MBQS) was administered when the child was 6 months old (Pederson and Moran, 1995, Pederson et al., 1990). Mother-child interaction was observed at home during a 30 minutes free play session. Trained research assistants compared the mother’s behaviors to a list of 25 behaviors. Twenty-eight tapes (5.9%) were double-coded and yielded intraclass correlation of .82. The scoring was completed by research assistants who were blind to all other variables. Scores for cooperation, availability, acceptance and sensitivity were calculated for each mother (Ainsworth, 1969, Pederson and Moran, 1995). Sensitivity to the baby’s signals is measured by observing how accurate and appropriate the mother’s responses are to her baby’s needs. Cooperation looks at how mother’s responses interfere or not with the baby’s activities and how often she interferes. A more cooperative mother interferes less frequently and less intrusively than a less cooperative mother. Availability assesses how accessible to mother is to her baby, physically and psychologically. Acceptance evaluates to which extent mother has integrated her positive and negative feelings towards her child. A more accepting mother can still sometimes be irritated with her baby’s behavior but less frequently and for shorter periods of time. Given that the 4 scales are highly intercorrelated (both in our sample, and in the protocol’s design (Pederson and Moran, 1995, Pederson et al., 1990), the overall score of maternal sensitivity, which consists of the mean of the four scores, was used.
Sociodemographics

Socio-economic status (SES) was based on maternal education and family income, as reported by the mother during pregnancy. Statistic Canada’s low-income cutoff (before tax) was used to assess income level (high vs. low). The level of education was also dichotomized between low and high education, where high education was defined as having at least some college education. Two SES groups were obtained: high SES (high maternal education level and high income), and middle/low SES (low on at least one of the variables).

Statistical Analyses

To determine if SRM presence was different in gender and SES groups, chi-square tests were used. A generalized estimation equation (GEE) was applied to assess whether maternal characteristics were associated with the presence of SRM. Candidate predictors of SRM were maternal sensitivity, maternal anxiety and maternal prenatal depressive symptoms. Gender and SES were considered to be potential confounding variables and therefore included in the model. GEE allows taking into account the longitudinal aspect of the dependent variable (SRM).

The potential link between SRM and behavioral/emotional problems was then evaluated using linear regressions. Concurrent maternal level of depressive symptoms was used to control for reporting biases associated to negative mood. Other maternal characteristics (anxiety trait and sensitivity) were used as covariates considering their potential associations with behavioral/emotional problems. Sociodemographic variables (SES and gender) were also considered as potential confounding variables and were
included in the models. Analyses were conducted using IBM SPSS Statistics 21. Significance level was set at p<.05 for all tests.

**Results**

Seventy children (13.23%) in the MAVAN cohort presented SRM at least once between 12 and 48 months. The proportions of children presenting SRM at different ages are displayed in Table 1. Of those 70 children, 50 of them presented SRM only at one time point, 16 presented SRM at 2 time points, and 4 presented SRM at 3 or more time points. Chi-square tests revealed that SRM prevalence did not vary significantly as a function of gender or SES.

**Maternal characteristics associated with SRM**

Maternal sensitivity and prenatal depressive symptoms were found to be associated with SRM (\(\hat{\beta} = -0.17, p = 0.04\); \(\hat{\beta} = 0.06, p < 0.01\); Table 2). An increase in the maternal sensitivity score was associated with absence of SRM whereas an increase in maternal prenatal depressive symptoms was found to be associated with the presence SRM. However, maternal anxiety was not a significant predictor of SRM in the presence of maternal depression and sensitivity (\(\hat{\beta} = -0.02, p = 0.31\), Table 2). These associations were still observed after controlling for SES and gender.

**Behavioral/emotional problems associated with SRM**

The presence of SRM at any time point (between 12 and 48 months) was found to be a predictor of internalizing problems at 48 months when controlling for demographic variables (SES, gender and maternal characteristic(concurrent maternal depressive symptoms, maternal trait anxiety, and maternal sensitivity) (\(\hat{\beta} = 0.17, p = 0.01\), Table 3).
Among the four subscales included in the internalizing score, only the anxious/depressed scale was significantly predicted by SRM, while controlling for sociodemographic variables and maternal characteristics ($\beta = 0.22, p = 0.001$). The other three internalizing problems subscales were not associated with SRM: emotionally reactive ($\beta = 0.08, p = 0.23$), somatic complaints ($\beta = 0.10, p = 0.13$) and withdrawn ($\beta = 0.13, p = 0.05$). SRM was not a significant predictor of externalizing problems at 48 months ($\beta = 0.04, p = 0.60$, Table 4).

**Discussion**

The presence of SRM in our sample (13%) is similar to what has been previously reported in the literature (Hoban, 2010, Klackenberg, 1971, Laberge et al., 2000, Petit et al., 2007). One previous study has suggested the peak prevalence to be at 9 months old with a sharp decrease after 12 months (Klackenberg, 1971). It has been reported that the onset on SRM is often observed within the first year of life and that the behavior rarely persists in the teenage years (Laberge et al., 2000, Petit et al., 2007, Thorpy and Golvinsky, 1987).

No gender effect was observed in the present sample. Previous studies reported the prevalence of head-banging to be two to three times higher in males than females (Manni and Terzaghi, 2005, Thorpy and Golvinsky, 1987). To that effect, Thorpy and Golvinsky (1987) suggested that head-banging should be differentiated from other forms of rhythmic movements due to: the gender difference; the more violent character of this particular form of SRM; and the low prevalence of this type of SRM. Nevertheless, the overall SRM prevalence does not seem to be associated with gender differences (Klackenberg, 1971, Petit et al., 2007) and the present results support this observation.
Maternal and Environmental Characteristics

Observing behavioral manifestations in infants of imprisoned mothers, Spitz and Wolf (1949) proposed that SRM are the result of “an emotionally unbalanced mother-child relationship”. However, the incidence of body rocking was found to be similar in institutionalized infants than in non-institutionalized ones and Klackenberg (1971) concluded that Spitz and Wolf (1949)’s interpretation was unlikely to be accurate. More recently, Petit et al. (2007) found that persistent body rocking was associated with higher maternal depression and low family SES. The present results also showed that an increase in maternal prenatal depressive symptoms was associated with the presence of SRM, while higher SES was associated with the absence of SRM. Finally, lower maternal sensitivity was associated with the presence of SRM. To our knowledge, this is the first study showing such an association using an objective measure of maternal sensitivity. However, maternal trait anxiety was not a significant predictor of SRM.

Since SRM has been hypothesized to be a form of self-soothing (Thorpy and Golvinsky, 1987), a potential explanation could be that a child is more likely to use self-soothing techniques at bedtime in a more adverse environment (Petit et al., 2007). The present results are aligned with this hypothesis. Nonetheless, lower SES, maternal depressive symptoms and lower sensitivity only account for part of the early life adversity a child may encounter. Children growing up in challenging environments have to face multiple risk factors at the time, and it is thought that the accumulation of these factors engender increased sleep problems (Cronin et al., 2008, Sadeh et al., 2000). Furthermore, infants’ sleep problems have been associated with poorer health in both parents, and higher level of conflict in the couple (Lam et al., 2003, Martin et al., 2007). Future studies should
explore other adversity factors that could be associated with SRM such as marital strain, family structure and functioning; as well as father-child relationship. Although, not investigated in the etiology of SRM, genetic components have been found for other sleep disorders, including sleep-related movement disorders such as restless leg syndrome and bruxism (Sehgal and Mignot, 2011, Hublin and Kaprio, 2003). Future studies should investigate potential candidate genes such as those implicated in other sleep disorders and behavioral/emotional problems.

**Behavioral/emotional problems**

The present results show that the presence of SRM between 12 and 48 months of age is a good predictor of internalizing problems at 48 months, while controlling for SES, gender and mother’s characteristics. An association between a previous history of childhood SRM and anxiety at the beginning of adolescence has also been described in another cohort (Laberge et al., 2000). Case studies on adolescents and adults reported comorbidity with emotional distress, mild anxiety and borderline personality disorder (Chisholm and Morehouse, 1996, Kempenaers et al., 1994, Manni and Terzaghi, 2005). A higher prevalence of ADHD in subjects with SRM was also documented (Hoban, 2010, Walters et al., 2008). In addition, previous reports of associations with mental retardation and psychopathologies have been made, but mainly in adult or adolescent samples (Mayer et al., 2007). In all of these reports, the onset of SRM was documented during childhood and had either persisted or relapsed. Literature on healthy adults with SRM remains scarce (Chisholm and Morehouse, 1996, Manni and Tartara, 1997) suggesting that persistent SRM is usually comorbid with psychological or psychiatric problems. Present results build on this association, showing that internalizing problems in
preschoolers are associated with SRM. More specifically, problems related with depressive and anxiety symptoms were found to be associated with SRM. To our knowledge, this is the first report of an association between SRM and behavioral/emotional problems in preschoolers. Further studies are needed to determine if the presence of behavioral problems in SRM children is predictive of future psychological distress or persistent SRM.

Limitations

One limitation to our study is that a different sleep questionnaire was used at 48 months than at earlier time-points. The question assessing SRM between 12 and 36 months was less inclusive and only referred to body rocking movements. It should also be noted that all SRM questionnaires were completed by the mother; therefore the assessment of SRM relied on mothers’ observations and recall. It is possible that SRM was underestimated because of recall biases or SRM might have been unnoticed at least at some occasions. The measure of maternal anxiety was only available at 24 months. However, the Trait-Anxiety scale was used as it captures the responder’s general anxiety tendency as opposed to that State-Scale which is design to measure the current level of anxiety symptoms (Spielberger et al., 1983, Spielberger et al., 1970). Although maternal depressive symptoms were used to control for negative mood bias; children’s behavioral/emotional problems might still have been under- or over-reported because of recall biases. Reports of emotional/behavioral problems were only available at 48 months, and it is therefore not possible to know if the association between SRM and emotional/behavioral problems was present earlier. Lastly, the design of the study does
not allow inferring causality and only describe associations between the different variables.

**Conclusion**

Notwithstanding these limitations, our study led interesting and novel results concerning the association of SRM with behavioral/emotional problems and maternal characteristics, using an objective measure of mother-infant interaction. Furthermore, longitudinal studies on SRM are scarce. Other studies with sizable samples would definitely contribute to better understand the causes, correlates and impacts of this less studied sleep-related movement.

**Acknowledgments**

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References
Table 1: Proportion of children presenting sleep rhythmic movements as a function of gender and SES in the MAVAN cohort

<table>
<thead>
<tr>
<th>Age</th>
<th>SRM Boys</th>
<th>SRM Girls</th>
<th>$\chi^2$</th>
<th>p-value</th>
<th>SRM low and middle SES</th>
<th>SRM high SES</th>
<th>$\chi^2$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 months</td>
<td>6.62%</td>
<td>4.26%</td>
<td>.789</td>
<td>.374</td>
<td>8.93% (n=5)</td>
<td>3.83% (n=7)</td>
<td>2.342</td>
<td>.126</td>
</tr>
<tr>
<td>(N=293)</td>
<td>(n=10)</td>
<td>(n=6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>18 months</td>
<td>4.79%</td>
<td>6.16%</td>
<td>.286</td>
<td>.593</td>
<td>7.14% (n=4)</td>
<td>5.56% (n=11)</td>
<td>.198</td>
<td>.656</td>
</tr>
<tr>
<td>(N=314)</td>
<td>(n=8)</td>
<td>(n=9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 months</td>
<td>6.06%</td>
<td>4.19%</td>
<td>.742</td>
<td>.389</td>
<td>4.92% (n=3)</td>
<td>5.56% (n=16)</td>
<td>.040</td>
<td>.842</td>
</tr>
<tr>
<td>(N=422)</td>
<td>(n=14)</td>
<td>(n=8)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>36 months</td>
<td>4.65%</td>
<td>3.70%</td>
<td>.224</td>
<td>.636</td>
<td>5.36% (n=3)</td>
<td>3.53% (n=10)</td>
<td>.422</td>
<td>.516</td>
</tr>
<tr>
<td>(N=404)</td>
<td>(n=10)</td>
<td>(n=7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48 months</td>
<td>5.08%</td>
<td>7.87%</td>
<td>.121</td>
<td>.270</td>
<td>3.51% (n=2)</td>
<td>6.77% (n=18)</td>
<td>.858</td>
<td>.354</td>
</tr>
<tr>
<td>(N=375)</td>
<td>(n=10)</td>
<td>(n=14)</td>
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<td></td>
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<tr>
<td>Any time-point</td>
<td>12.94%</td>
<td>13.63%</td>
<td>.056</td>
<td>.813</td>
<td>13.79% (n=12)</td>
<td>12.93% (n=45)</td>
<td>.045</td>
<td>.831</td>
</tr>
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<td>(N=529)</td>
<td>(n=37)</td>
<td>(n=33)</td>
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</tbody>
</table>

Table 2: Predictors of sleep rhythmic movements in children

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\hat{\beta}$</th>
<th>p-value</th>
</tr>
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<tbody>
<tr>
<td>Gender (female)</td>
<td>-0.14</td>
<td>0.65</td>
</tr>
<tr>
<td>SES (low)</td>
<td>-1.06</td>
<td><strong>0.02</strong></td>
</tr>
<tr>
<td>Time</td>
<td>-0.02</td>
<td>0.22</td>
</tr>
<tr>
<td>Prenatal maternal depression</td>
<td>0.06</td>
<td>&lt;<strong>0.01</strong></td>
</tr>
<tr>
<td>Maternal anxiety</td>
<td>-0.02</td>
<td>0.31</td>
</tr>
<tr>
<td>Maternal sensitivity</td>
<td>-0.17</td>
<td><strong>0.04</strong></td>
</tr>
</tbody>
</table>

18
### Table 3: Predictors of internalizing problems at 48 months

<table>
<thead>
<tr>
<th></th>
<th>$\beta$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES</td>
<td>-0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>Gender</td>
<td>0.41</td>
<td>0.52</td>
</tr>
<tr>
<td>SRM</td>
<td>0.17</td>
<td>0.01</td>
</tr>
<tr>
<td>Maternal depression (concurrent)</td>
<td>0.08</td>
<td>0.57</td>
</tr>
<tr>
<td>Maternal anxiety</td>
<td>0.23</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Maternal sensitivity</td>
<td>-0.04</td>
<td>0.57</td>
</tr>
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### Table 4: Predictors of externalizing problems at 48 months

<table>
<thead>
<tr>
<th></th>
<th>$\beta$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES</td>
<td>-0.09</td>
<td>0.20</td>
</tr>
<tr>
<td>Gender</td>
<td>0.01</td>
<td>0.94</td>
</tr>
<tr>
<td>SRM</td>
<td>0.04</td>
<td>0.60</td>
</tr>
<tr>
<td>Maternal depression (concurrent)</td>
<td>0.13</td>
<td>0.10</td>
</tr>
<tr>
<td>Maternal anxiety</td>
<td>0.05</td>
<td>0.52</td>
</tr>
<tr>
<td>Maternal sensitivity</td>
<td>-0.01</td>
<td>0.94</td>
</tr>
</tbody>
</table>