

Regular Sleep Protects against Internalizing Problems in Toddlers Temperamentally at Risk



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INTRODUCTION

- Previous studies suggest that there are relations between children's sleep disorders or inadequate amounts of sleep and behavior problems.
- Most of these studies demonstrate links between sleep deficits and externalizing behavior problems.
- Sleep may be especially important for children whose temperament predisposes them to behavior problems.
- Bates et al. (2002) reported that disrupted sleep was associated with preschoolers' poor adjustment at school, particularly for temperamentally resistant to control children.
- There may be a link between sleep deficits and internalizing behavior problems for children temperamentally at risk.
- The present study considers the role of temperament as a moderator of the relation between restlessness and internalizing behavior problems in toddlers.

METHODS

Participants:

- 37 2.5 year old children (17 boys, 20 girls)
- 37 Secondary caregivers (31 daycare/babysitter, 6 other parent)

Measurements:

- Restlessness:** Composite of number of wakings (actigraph), average minutes awake (actigraph), and activity (actigraph)
 - Actigraph: worn for seven nights
- Child Behavior Checklist:** Internalizing scale is composed of Emotionally Reactive, Anxious/Depressed, Somatic Complaints, and Withdrawn
- Infant Characteristics Questionnaire:** Mother reported Unadaptability (fear, distress in novel situations), Difficultness (fussiness, hard to soothe), and Resistance to Control

RESULTS

Table 1. Descriptive Statistics

	N	M	SD	Range
Restlessness	37	.10	.75	-.96 – 2.29
ICQ Unadaptable	37	14.374	4.57	6.67 – 24
ICQ Difficult	37	23.36	5.65	14 – 41
ICQ Resistant	37	12.725	3.05	7 – 21
CBCL Internalizing – Secondary	37	5.027	4.82	0 - 23

Table 2. Multiple regression analyses predicting secondary caregiver internalizing behavior problems

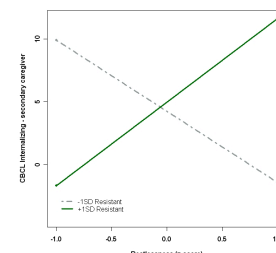
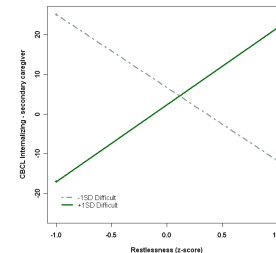
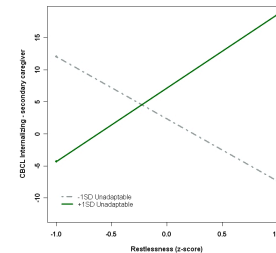
Variable	Model			adj R ²	F
	B	SE B	β		
Model 1					
Restlessness	.90	.90	.14	.34	7.10**
ICQ Unadaptable	.55	.67	.12		
Restlessness x Unadaptable	2.40	.66	.53**		
Model 2					
Restlessness	.49	.98	.08	.29	5.80**
ICQ Difficult	-.35	.84	-.06		
Restlessness x Difficult	3.00	.84	.58**		
Model 3					
Restlessness	.50	1.03	.08	.23	4.59**
ICQ Resistant to Control	.12	.75	.03		
Restlessness x Resistant to Control	2.05	.67	.50**		

Note. df (4, 33). *p < .05. **p < .01

Table 3. Correlations

Variables	1	2	3	4	5	6	7	8
1 Restlessness	—							
2 ICQ Unadaptable	.07	—						
3 Unadaptable x Restlessness	.23	.53**	—					
4 ICQ Difficult	.14	.71**	.14	—				
5 Difficult x Restlessness	.28*	.67**	.28*	.67**	—			
6 ICQ Resistant	.24	.85**	.24	.85**	.24	—		
7 Resistant x Restlessness	.12	.75	.12	.75	.12	.75	—	
8 CBCL Internalizing - Secondary	.205	.67	.205	.67	.205	.67	.50**	—

Note. *p < .05. **p < .01



DISCUSSION

Summary of Results:

- Restless sleep is more strongly associated with higher ratings of internalizing by secondary caregivers for children high in temperamental unadaptability, difficultness, or resistance to control.
- It was unexpected that less restless sleep was associated with higher ratings of internalizing by secondary caregivers for children low in temperamental unadaptability, difficultness, or resistance to control.

- This could have occurred because sleep-deprivation often makes toddlers more active and "wired," thus appearing more outgoing.

Limitations and Future Directions:

- The generalizability of these results is limited due to the small, predominately middle class, European American sample.
- As more data are collected, we will investigate whether these relations are similar at 36 and 42 months controlling for initial levels of internalizing.
- In addition, with a larger sample we will test whether the relation holds for "pure" internalizing after partialling out the effects of externalizing behavior problems.

REFERENCE

Bates, John E., Viken, Richard J., Alexander, Douglas B., Beyers, Jennifer, Stockton, Lesley (2002). Sleep and adjustment in preschool children: Sleep diary reports by mothers relate to behavior reports by teachers. *Child Development*, 73, 62-74.

FOR FURTHER INFORMATION

Please contact mpassalo@indiana.edu.
More information on this and related projects is available at www.indiana.edu/~batesdjl/