

The Feasibility of Remote Measurement of Infant Sleep and Motor Development

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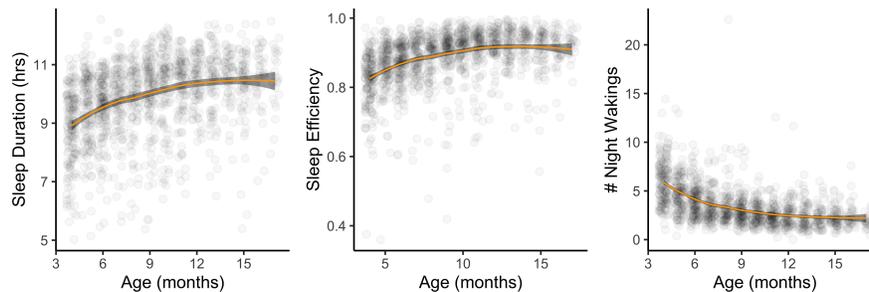
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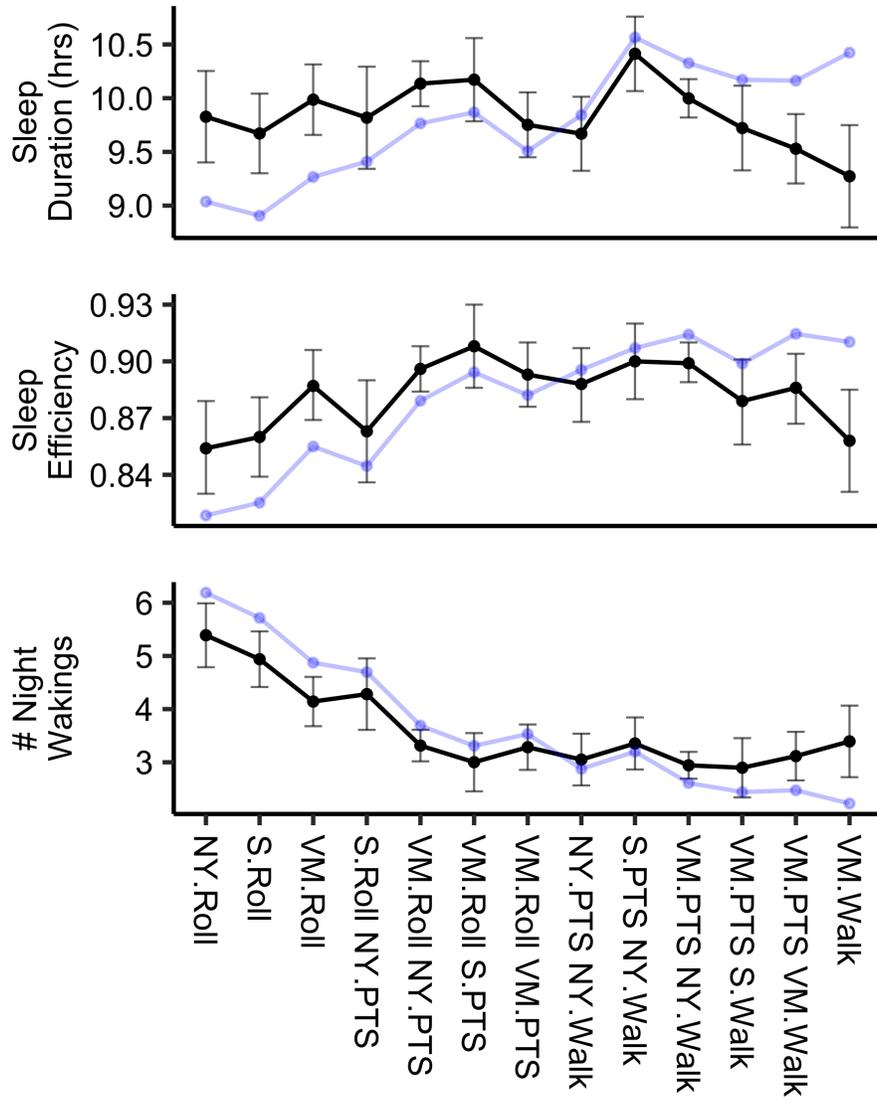
Abstract

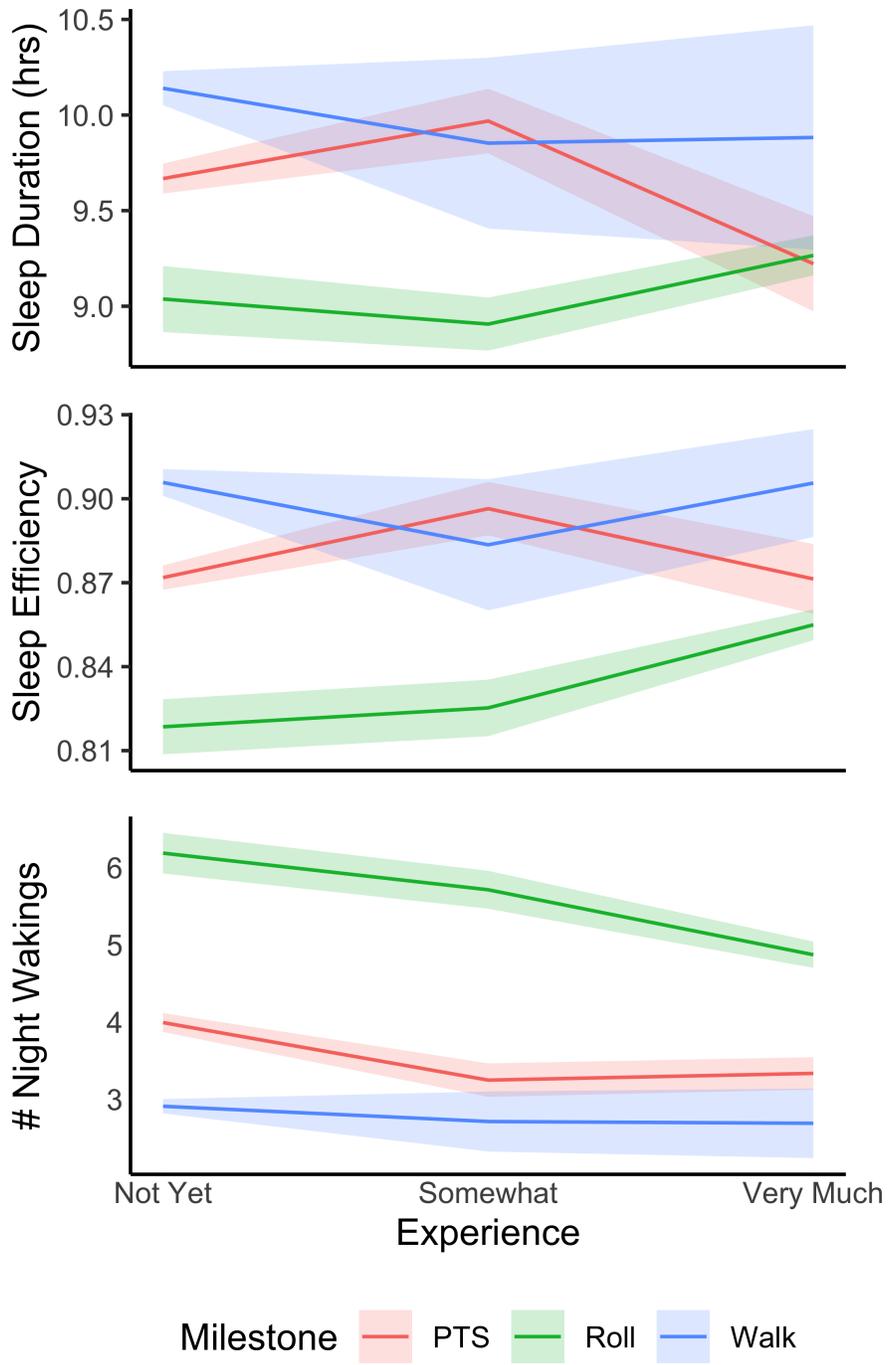
In response to the COVID-19 pandemic shut-down of in-person research laboratories, remote data collection became mainstream in developmental psychology research. The aim of this study was to test the feasibility of two remote data collection methods for studying sleep and motor development in infancy and the relationship between the two. We asked 1,371 parents of infants aged 4 to 17 months who used the Nanit baby monitor to take the on-line Survey of Well-being of Young Children (SWYC) about their infants' motor experience. Nanit uses auto-videosomnography and computer vision algorithms to calculate and report summary statistics of infants' sleep. Nanit replicated all expected developmental trends in sleep, while the SWYC only replicated some, appearing to underestimate infants at the transition between motor milestones. However, we replicated some well-established findings regarding the relationship between sleep and motor development using both measures, suggesting that both Nanit and the SWYC can feasibly be used for remote data collection, especially if some modifications were made to how researchers explained using the SWYC to caregivers. Researchers should consider alternatives to traditional research methods not only when in-person participation is difficult or impossible, but also when large samples are needed and/or simple measurement tools are sufficient.

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Blinded-SWYC-Manuscript.docx available at <https://authorea.com/users/588620/articles/625751-the-feasibility-of-remote-measurement-of-infant-sleep-and-motor-development>







Variables	n	%
Race/Ethnicity		
African American	5	0.04%
Asian	40	2.91%
Chose not to answer	15	1.09%
Hispanic	31	2.26%
Not asked	894	65.21%
Other	16	1.17%
White	370	26.99%
Highest degree		
Graduate	183	13.35%
College	241	17.58%
Some college	34	2.48%
High school	15	1.09%
Less than high school	1	0.07%
Chose not to answer	3	0.22%
Not asked	894	65.21%
Country		
United States	366	26.70%
Canada	62	4.52%
United Kingdom	22	1.61%
Australia	5	0.37%
Israel	4	0.29%
Ireland	2	0.15%
Mexico	2	0.15%
Other	12	8.75%
Not asked	896	65.35%
Annual Household Income		
> \$200,000	114	8.32%
\$150,000-200,000	83	6.05%
\$100,000-150,000	105	7.66%
\$75,000-100,000	52	3.79%
\$50,000-75,000	50	3.65%
\$25,000-50,000	15	1.09%
< \$25,000	6	0.44%
Chose not to answer	52	3.79%
Not asked	894	65.21%

<i>Milestone subgroups</i>	<i>n</i>
Not Yet Roll ^e	57
Somewhat Roll ^e	95
Very Much Roll ^e	147
Somewhat Roll and Not Yet PTS ^e	27
Very Much Roll and Not Yet PTS ^e	217
Very Much Roll and Somewhat PTS ^e	40
Very Much Roll and Very Much PTS ^e	66
Not Yet PTS and Not Yet Walk ^e	48
Somewhat PTS and Not Yet Walk ^e	47
Very Much PTS and Not Yet Walk ^e	317
Very Much PTS and Somewhat Walk ^e	43
Very Much PTS and Very Much Walk ^e	110
Very Much Walk ^e	117
<i>Excluded subgroups</i>	
Not Yet Roll and Not Yet PTS ^e	6
Somewhat Roll and Somewhat PTS ^e	6
Somewhat Roll and Very Much PTS	8
Not Yet PTS and Very Much Walk	1
Somewhat PTS and Somewhat Walk ^e	1
Somewhat PTS and Very Much Walk	2
Somewhat Walk ^e	4
Not Yet Walk ^e	12

		Age (months)													
		4	5	6	7	8	9	10	11	12	13	14	15	16	17
Roll	Not Yet	<i>N</i> 45	12	4	2	0	-	-	-	-	-	-	-	-	-
		<i>z</i> 9.24	-0.33	-3.32	-3.16	-3.43	-	-	-	-	-	-	-	-	-
	Somewhat	<i>N</i> 61	34	26	13	2	-	-	-	-	-	-	-	-	-
		<i>z</i> 6.35	1.41	-1.26	-2.77	-4.83	-	-	-	-	-	-	-	-	-
	Very Much	<i>N</i> 55	92	125	103	95	-	-	-	-	-	-	-	-	-
		<i>z</i> -11.50	-1.04	3.23	4.46	6.45	-	-	-	-	-	-	-	-	-
PTS	Not Yet	<i>N</i> -	-	127	78	45	25	12	6	3	3	0	-	-	-
		<i>z</i> -	-	11.05	6.60	2.54	-2.43	-3.93	-4.78	-4.69	-4.38	-4.37	-	-	-
	Somewhat	<i>N</i> -	-	16	16	14	24	13	6	6	1	0	-	-	-
		<i>z</i> -	-	0.03	1.13	1.3	3.06	0.49	-1.47	-0.97	-2.47	-2.48	-	-	-
	Very Much	<i>N</i> -	-	12	24	38	78	86	94	78	74	60	-	-	-
		<i>z</i> -	-	-8.21	-5.37	-2.43	0.52	2.71	4.16	3.89	4.29	4.28	-	-	-
Walk	Not Yet	<i>N</i> -	-	-	-	-	119	101	82	52	39	19	10	2	0
		<i>z</i> -	-	-	-	-	4.83	4.15	2.25	-0.08	-1.18	-2.86	-4.79	-4.57	-3.89
	Somewhat	<i>N</i> -	-	-	-	-	3	7	11	11	7	5	3	1	0
		<i>z</i> -	-	-	-	-	-1.93	-0.21	1.39	2.07	0.72	0.44	-0.74	-1.08	-1.31
	Very Much	<i>N</i> -	-	-	-	-	5	3	13	24	32	36	54	38	25
		<i>z</i> -	-	-	-	-	-5.68	-5.53	-3.69	-0.84	1.28	3.69	6.84	6.70	5.87