CORRECTION

CrossMark

Correction to: Outcomes of a Behavioral Intervention for Sleep Disturbances in Children with Autism Spectrum Disorder

Sela Ann Sanberg[1,2] · **Brett R. Kuhn**[1] · **Abigail E. Kennedy**[1]

Correction to:
Journal of Autism and Developmental Disorders
https://doi.org/10.1007/s10803-018-3644-4

The original version of this article unfortunately contained errors. The errors induced during the production process are corrected. The correct keywords, Figs. 1, 2, 3, 4, 5 and 6, and Tables 2, 4 are given below.

The Keywords should have appeared as: **Keywords** Autism · Sleep · Children · Parents · Behavioral intervention · Behavioral medicine

Author Contributions SS conceived of the study, participated in its design and coordination, participated in the measurement and data acquisition, performed the data analysis and interpretation, and drafted and revised the manuscript and figures; BK helped conceive the study, participated in its design, data analysis and interpretation, and manuscript revisions. AK participated in the coordination of the study, performed the measurement and data acquisition, and helped with manuscript revisions.

The original article can be found online at https://doi.org/10.1007/s10803-018-3644-4.

✉ Sela Ann Sanberg
sela.a.sanberg@wmich.edu

Brett R. Kuhn
brkuhn@unmc.edu

Abigail E. Kennedy
abigail.kennedy@unmc.edu

1 Department of Psychology, Munroe-Meyer Institute, University of Nebraska Medical Center (UNMC), 985450 Nebraska Medical Center, Omaha, NE 68198-5450, USA

2 Present Address: Department of Psychology, Western Michigan University, 1903 W. Michigan Ave., Kalamazoo, MI 49008-5439, USA
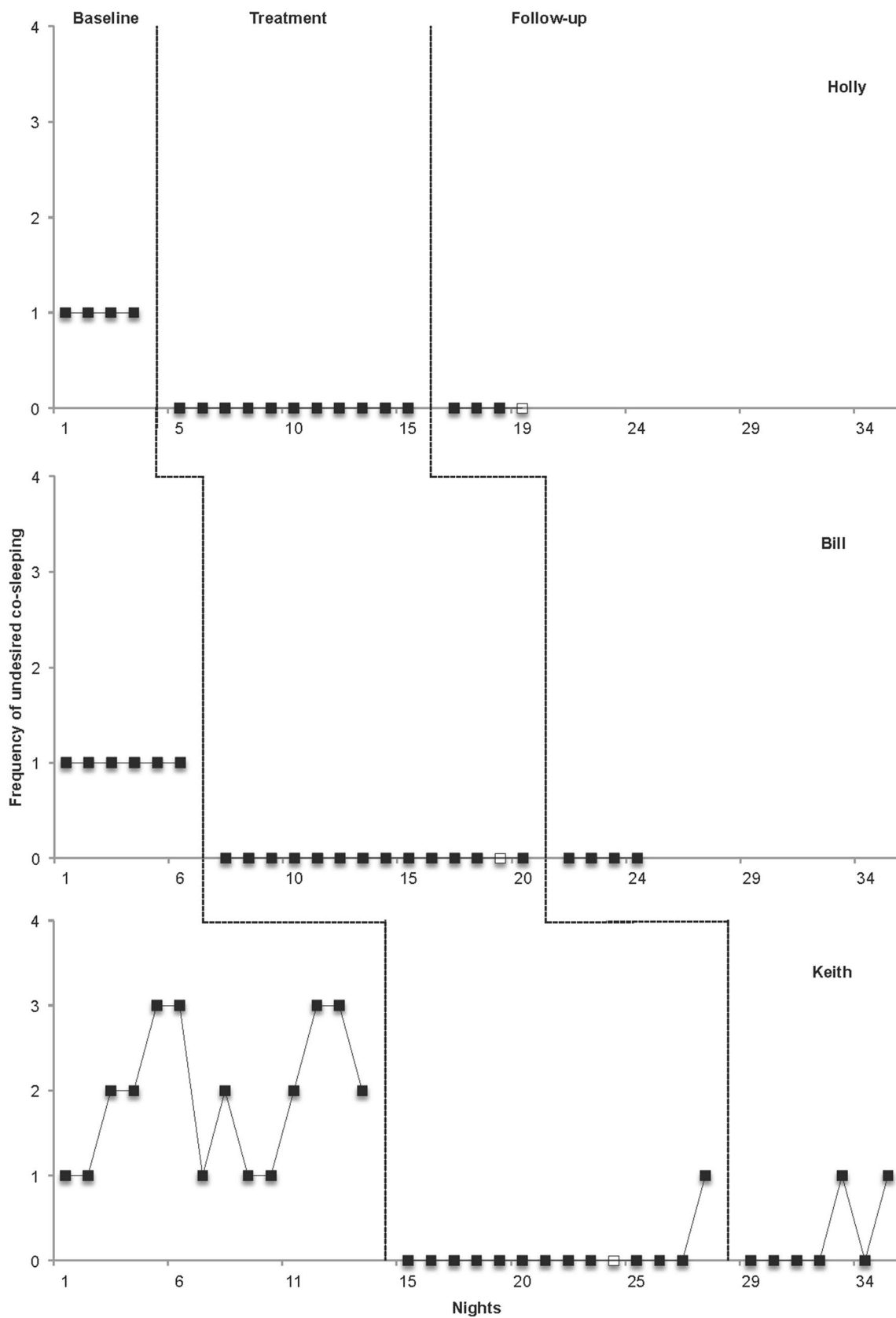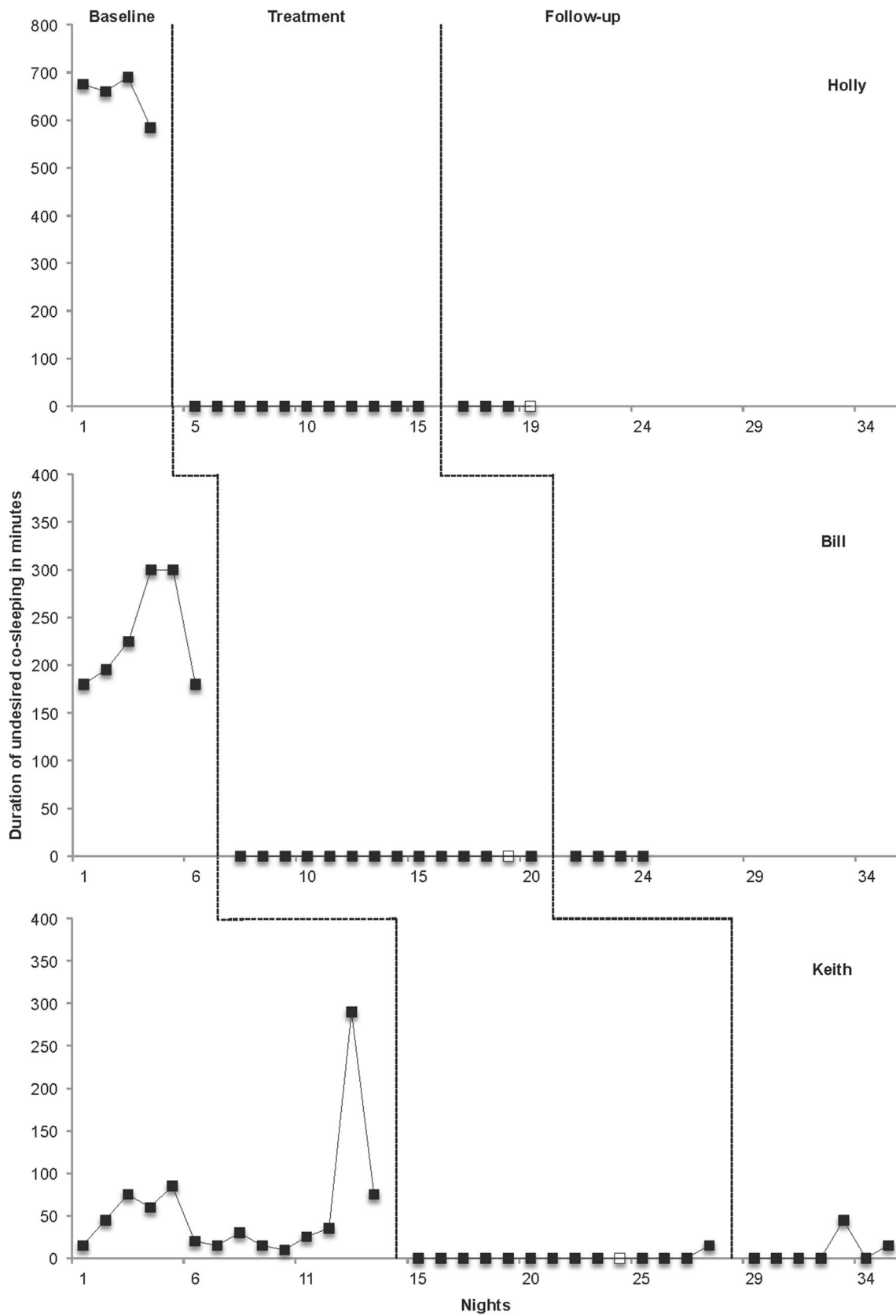
Fig. 1 Frequency of undesired co-sleeping per night with parents across children. Open squares represent a change in the child's routine

Fig. 2 Duration of undesired co-sleeping with parents in minutes (min) across children. Open squares represent a change in the child's routine
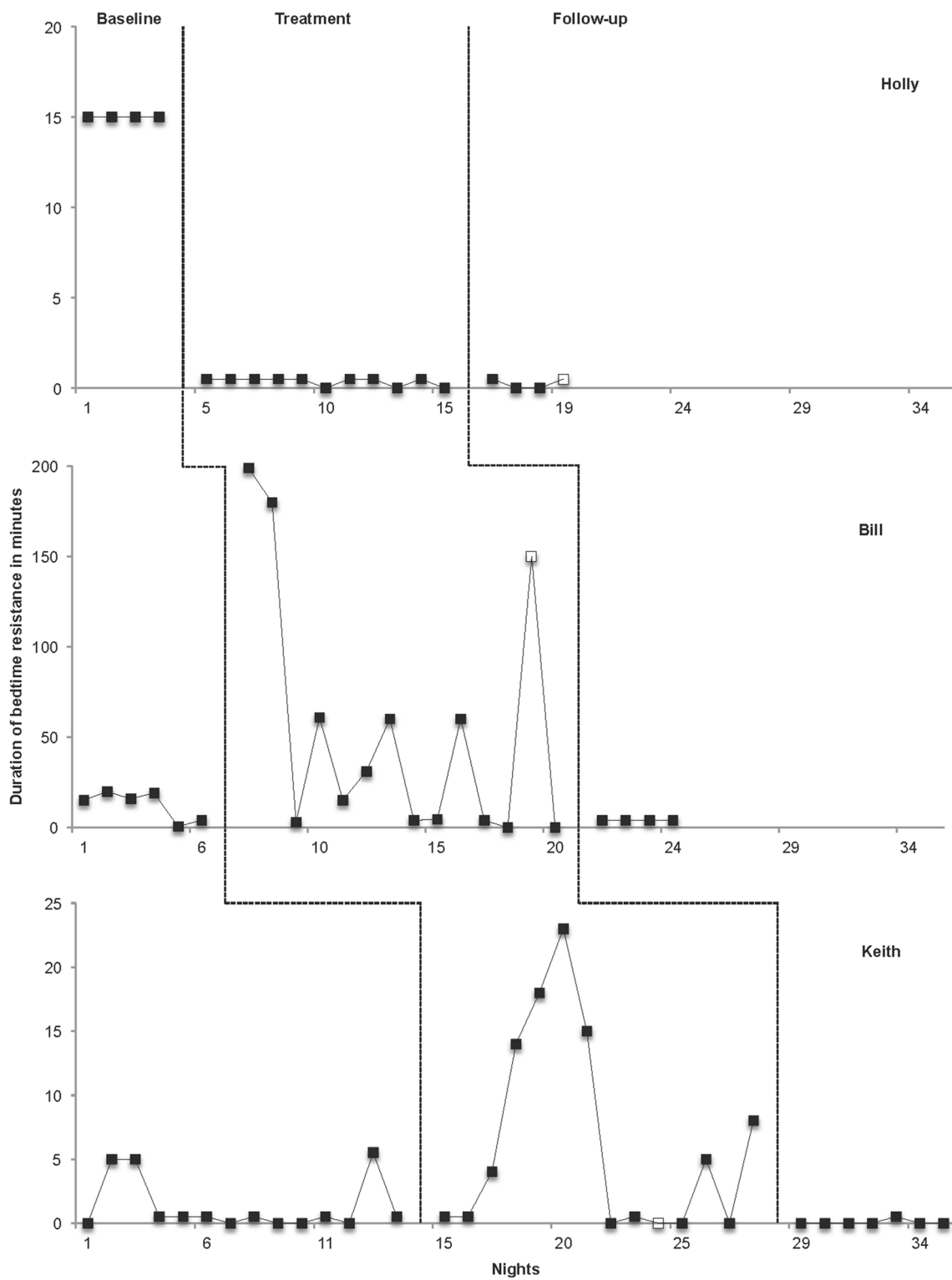
Fig. 3 Duration of bedtime resistance in minutes (min) across children. Open squares represent a change in the child's routine
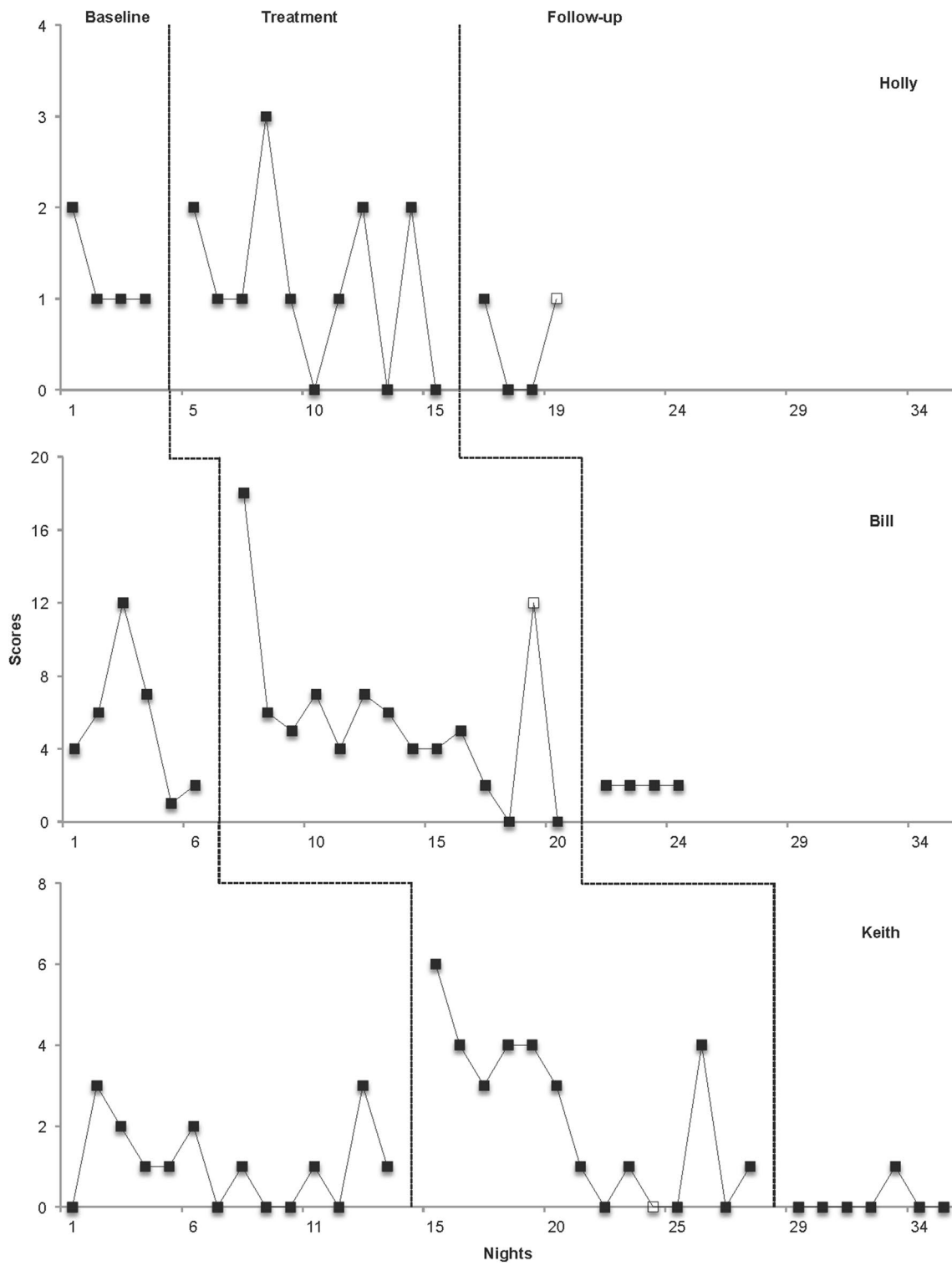
Fig. 4 Disruptive behavior composite scores across children. Open squares represent a change in the child's routine
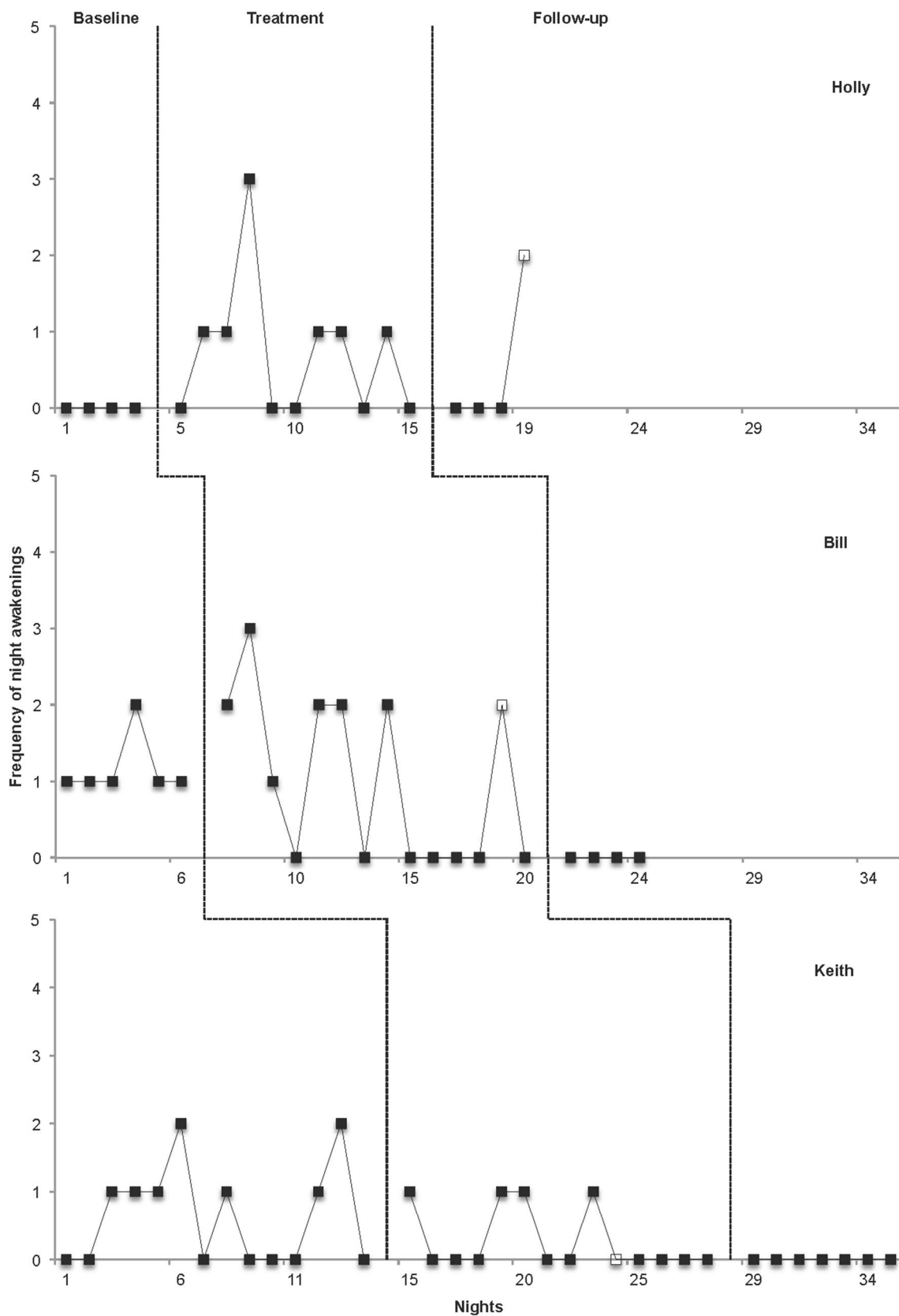
Fig. 5 Frequency of night awakenings across children. Open squares represent a change in the child's routine
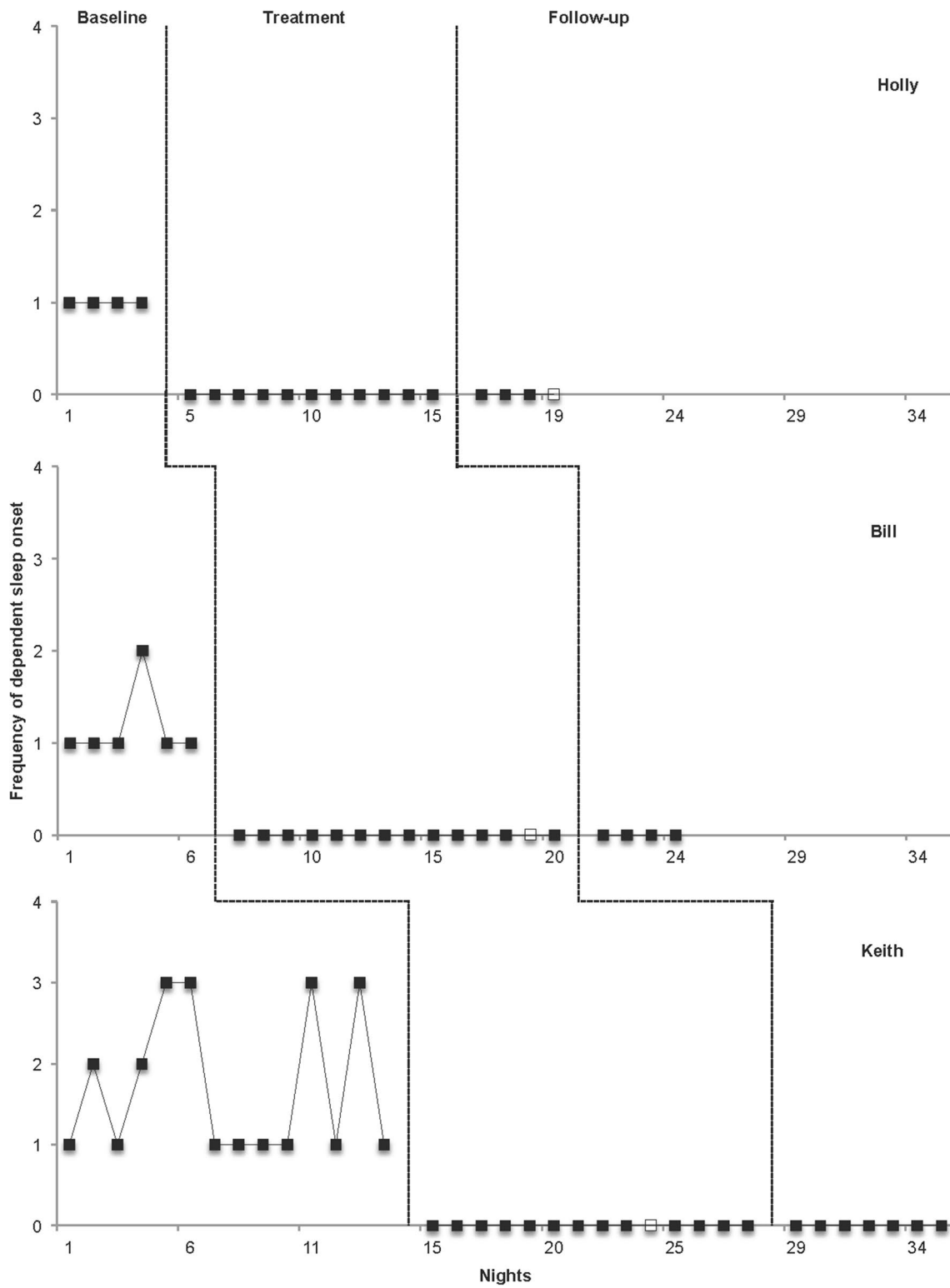
Fig. 6 Frequency of dependent sleep onset across children. Open squares represent a change in the child's routine

Table 2 Dependent variables on sleep diary & sleep related behavior diary

Dependent sleep variables	Definitions
Frequency of night-awakenings (FNA)	Total number of times child awoke during the night and got out of bed; marked by time with an up arrow, not including final rising
Waking-up after sleep onset (WASO)	Total minutes the child is awake after initially falling asleep; Non-shaded in boxes of time (small box = 15 min.; large box = 1 h) after initial sleep onset, until time of final rising
Sleep onset latency (SOL)	The time between initially being placed in bed awake, marked by time with a down arrow, and the time of sleep onset each night, marked by shaded in boxes
Total sleep time (TST)	Total duration of nighttime and daytime sleep acquired within 24-h; Shaded in boxes for when the child is asleep (small box = 15 min.; large box = 1 h)
Time in bed (TIB)	Amount of time the child was physically in bed during within 24-h; Time child gets into bed marked by a down arrow until final rising
Dependent sleep onset (DSO)	The achievement of sleep with the required assistance of a parent; Marked by the letter D next to a down arrow
Independent sleep onset (ISO)	The achievement of sleep without the assistance of a parent; Marked by the letter I next to a down arrow
Dependent sleep related behavior variables	**Definitions**
Undesired co-sleeping (UC-S)	Unwanted co-sleeping with a parent or sibling in any room during a 24 h period; Frequency and duration of undesired co-sleeping with parent(s) or siblings by child
Sleeping in a non-designated area	Frequency of child sleeping in a location other than the child's bed (e.g., couch, car, floor, etc.) during a 24 h period
Location of non-designated sleep	Location of undesired co-sleeping with child

Table 4 Sleep variables (actigraphy, CSHQ-A, sleep and behavior diaries)

Dependent variables	Holly			Bill			Keith		
	BSL	EOT	FU	BSL	EOT	FU	BSL	EOT	FU
Actigraphy									
SOL (mean min.; SD)	43.5; (39.72)	13.81; (17.89)	31.5; (16.98)	73.5; (24.99)	23.71; (32.91)	31; (INC)	13; (10.14)	INC	5.57; (4.46)
TST (mean min.; SD)	399.25; (68.06)	491.27; (75.69)	475.25; (48.32)	414.5; (56.96)	401.64; (94.55)	463.75; (INC)	524.92; (91.64)	INC	502; (27.77)
SE (%; SD)	60.03%; (10.1)	81.08%; (10.73)	74.75%; (11.09)	68.23%; (10.15)	79.68%; (18.79)	84.49%; (INC)	88.57; (7.83)	INC	89.02%; (6.13)
WASO (mean min.; SD)	192; (69.2)	91.27; (74.10)	132.5; (102.86)	104.83; (70.33)	49.85; (27)	49.75; (INC)	50.78; (51.13)	INC	57.28; (39.90)
TIB (mean min.; SD)	667.25; (53.74)	605.18; (40.07)	642; (70.24)	608.5; (9.81)	507.85; (42.76)	548.5; (15.96)	598.12; (120.35)	INC	567.14; (60.16)
CSHQ-A subscale raw scores									
Sleep onset delay (range 1–3)	1	N/A	1	3	1	1	1	1	1
Sleep duration (range 3–9)	3	N/A	3	5	5	3	6	3	3
Night wakings (range 3–9)	5	N/A	5	7	6	4	7	4	5
Bedtime resistance (range 6–18)	14	N/A	6	9	6	6	12	7	6
Sleep disordered breathing (range 3–21)	4	N/A	3	3	4	3	4	3	3
CSHQ-A total scores	56	N/A	40	48	43	36	60	46	42
Sleep diary									
SOL (mean min; SD)	18.75; (7.5)	17.72; (22.06)	26.25; (22.5)	57.5; (45.9)	25.71; (36.47)	11.25; (7.5)	9.64; (13.93)	33.21; (38.21)	4.28; (7.31)
TST (mean min; SD)	652.5; (46.63)	550.90; (48.41)	577.5; (25.98)	502.5; (36.43)	445.71; (65.09)	532.5; (15)	598.92; (60.99)	578.57; (60.20)	608.57; (57.35)
SE (%)	97.18%	87.85%	94%	84.6%	85.82%	97%	94%	91.5%	99.32%
WASO (mean min; SD)	0; (0)	28.63; (32.48)	11.25; (22.5)	35; (7.74)	40.71; (52.10)	0; (0)	10.07; (19.92)	6.42; (12.77)	0; (0)
TIB (mean min; SD)	671.25; (49.56)	625.90; (11.79)	615; (36.74)	595; (22.58)	520.71; (40.94)	547.5; (15)	637.5; (52.87)	624.64; (51.16)	612.85; (59.64)
FNA (mean freq.; SD)	0; (0)	0.72; (0.94)	0.5; (1)	1.16; (0.41)	1; (1.11)	0; (0)	0.64; (0.74)	0.28; (0.46)	0; (0)
DSO (mean freq.; SD)	1; (0)	0; (0)	0; (0)	1.16; (0.40)	0; (0)	0; (0)	1.71; (0.91)	0; (0)	0; (0)
Behavior diary									
UC-S (mean min; SD)	652.5; (46.63)	0; (0)	0; (0)	230; (56.65)	0; (0)	0; (0)	56.78; (71.77)	1.07; (4)	8.57; (17)
UC-S (location)	Parents' bed	None	None	Parents' bed	None	None	Parents' bed, child's bed	Parents' bed	Parents' bed
N-DS (mean freq.; SD; location)	0; None	0; None	0; None	0.16; (0.40); N/A	0; None	0; None	0.13; (0.35); car, couch	0.06; (0.25); car	0; None
BR (mean min; SD)	15; (0)	0.36; (0.23)	0.25; (0.23)	12.41; (8.16)	55.10; (70.24)	4; (0)	1.32; (2.09)	6.32; (7.94)	0.07; (0.18)
DBC (mean scores; SD)	1.25; (0.5)	1.18; (0.98)	0.5; (0.57)	5.33; (3.98)	5.71; (4.66)	2; (0)	1.07; (1.07)	2.21; (2.0)	0.14; (0.37)

BSL baseline, *EOT* end of treatment, *FU* follow-up, *SOL* sleep onset latency, *TST* total sleep time, *SE* sleep efficiency, *WASO* waking-up after sleep onset, *TIB* time in bed, *CSHQ-A* children sleep habits questionnaire abbreviated, *FNA* frequency of night awakenings, *DSO* dependent sleep onset, *UC-S* undesired co-sleeping, *N-DS* non-designated sleep, *BR* bedtime resistance, *DBC* disruptive behavior composite, *N/A* not available, *INC* incomplete data due to software malfunction