

Sleep Treatment Workbook

Provide a brief description of your child's sleep problem (p. 1)

Describe your goals regarding your child's sleep (p. 1)

Understanding and Treating Sleep Problems of Children

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*National Autism Conference
Penn State University
August, 2014*

Important assumption of Behavior Analysis:

**Sleep problems are viewed
as skill deficits
which can be addressed
by teaching relevant skills**

Important assumption of Behavior Analysis:

**Autism is not a life sentence
of poor sleep
and tired days**

Good Sleep

falling asleep quickly

staying asleep through the night

rising without much trouble each morning

not feeling drowsy during the day

Why is Good Sleep Important?

Good sleep is restorative; without it, children are:

more irritable

more easily fatigued

more likely to suffer from unintentional injury

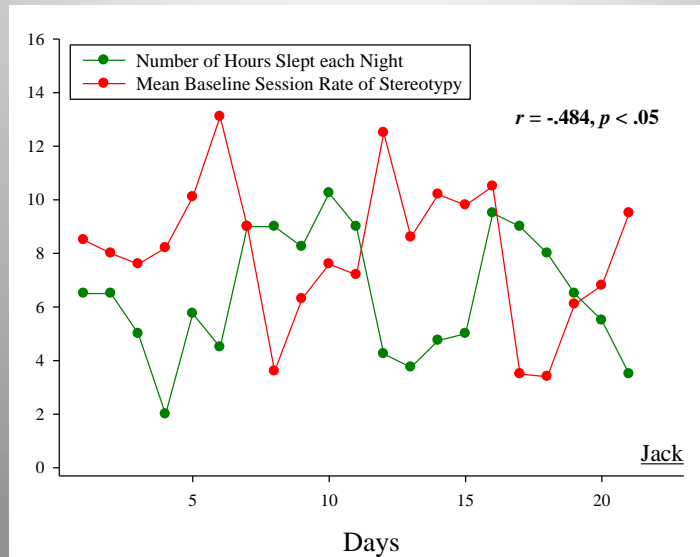
less likely to follow instructions

less likely to learn academic concepts

more likely to engage in problem behavior

(meltdowns, self-injury, aggression, stereotypy)

Without good sleep, people with autism may be more likely to engage in **stereotypy**



Why is Good Sleep Important?

Persistent sleep problems in childhood are also associated with:

childhood and adult obesity

adolescent behavioral and emotional problems

anxiety in adulthood

sleep problems through adulthood

Why is Good Sleep Important?

Children's sleep problems can lead to:

Maternal malaise and depression

Parental sleep problems

Erosion of the parent's relationship with each other and with their children

How Prevalent are Sleep Problems?

Sleep problems are prevalent:

35 - 50% of young children

63 - 73% of children diagnosed with autism

Sleep problems are persistent—

they do not typically remit with time

Why So Prevalent?

**Clash between our ancestral history
(encoded in our genes)
and existing cultural practices**

we are built to sleep in a particular context

but

we are expected to sleep in a very different context

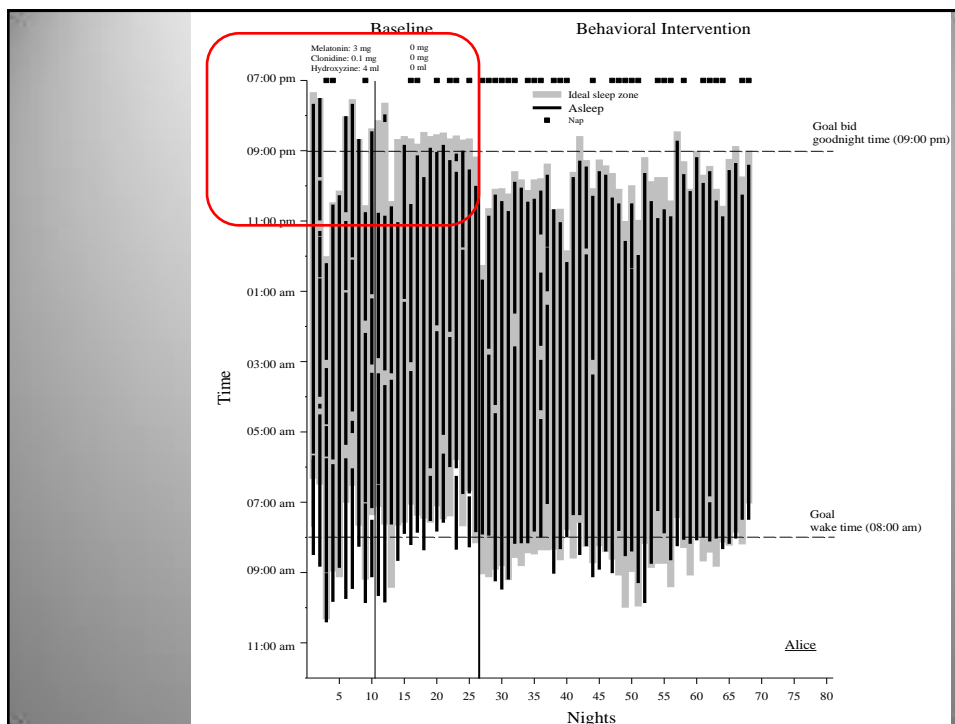
Treatment Options?

**Parents are likely to consult with pediatricians
despite typically limited training on assessment and
treatment of pediatric sleep problems**

Treatment Options?

81% of children's visits to pediatricians, psychiatrists, or family physicians for sleep problems result in a prescription for a medication

**despite no FDA approval,
no medication labeled for pediatric insomnia,
no (or inconsistent) efficacy signal in literature**



Melatonin?



- **There is evidence to suggest that:**
 - It can decrease sleep onset delay without increasing night awakenings
 - The side effects of melatonin are less than any other prescribed or OTC drug for improving sleep
 - The smaller/younger the child, the higher the dose needed for an effect to be observed
 - Consistent long term use mitigates its effects (vacations from Melatonin are probably important to schedule)
 - In the absence of some other intervention, it alone will never solve a chronic sleep problem
- **We surely do not know:**
 - The dose that will work, if any.
 - The likelihood of its efficacy or for which children it will be effective
- **If you use it, give it 45 min prior to bid good night and then turn down house lights**

Treatment Options?

Behavioral solutions are recommended 22% of time (Stojanovski et al., 2007)

but the solutions are relatively weak antecedent-oriented approaches

(e.g., positive routines prior to bed)

or not “behavioral” at all (candles and lotion)

Limitations of Applied Behavioral Research Relevant to Sleep Problems

- **Many rely exclusively on parent reports of sleep problems**
- **Many studies conducted in in-patient facilities (i.e., few home-based interventions)**
- **Most lack social acceptability measures**
- **Most lack comprehensive treatments**
- **Almost all interventions are not based on individualized controlling variables**

Common Sleep Problems

Nighttime routine noncompliance

Sleep-interfering behavior

Delayed sleep onset

Night awakenings

Early awakenings

Your turn.

Nominate any relevant sleep problems
(p. 1)

Assumptions Regarding Sleep

- *Behavioral quietude /Falling asleep* are the behaviors of interest
- Can be influenced by past and present events in one's sleeping environment
 - can be motivated (or demotivated)
 - can become reliant on environmental cues
 - can be affected by other reinforcers for other behaviors available at night

Looking at falling asleep.... through the lens of a contingency

- Conduct a contingency analysis: $EO + SD \rightarrow R \rightarrow Sr$
- That which is known:
 - Reinforcer (Sr) for falling asleep is *sleeping*
- That which is unknown:
 - Everything else!

Looking at sleep.... through the lens of a contingency

EO + SD \rightarrow Falling Asleep \rightarrow Sleep

- What alters the value of sleep as a reinforcer?

Looking at sleep.... through the lens of a contingency

EO + **SD** → Falling Asleep → Sleep

- What signals that the reinforcer is available (and prepares the body to “consume” the reinforcer), and are those signals available when the child wakes up multiple times each night?

Looking at sleep.... through the lens of a contingency

EO + SD → **Interfering behaviors** → Sr

- What other behaviors are occurring before and after the bid good night that are incompatible with falling asleep (i.e., that do not allow for behavioral quietude)?

Looking at sleep.... through the lens of a contingency

EO + SD → Interfering behaviors → **Sr**

- What reinforcers are available for behaviors that are incompatible with falling asleep?

Looking at sleep.... through the lens of a contingency

EO + SD → Incompatible behaviors → Sr

- What alters the value of these other reinforcers for behaviors that are incompatible with falling asleep?

Looking at sleep.... through the lens of a contingency

EO + **SD** → Incompatible behaviors → Sr

- What signals that these other reinforcers are available?

How do we assess and treat children's sleep problem?

- Through a general understanding of the common factors that influence good sleep and sleep problems
- Using an **open-ended indirect assessment** to identify the personal factors influencing the sleep problem
 - **SATT (Sleep Assessment and Treatment Tool)**
- By encouraging parents to develop the intervention with us
 - we support parents in their implementation of the assessment-based treatment via phone calls and weekly visits.

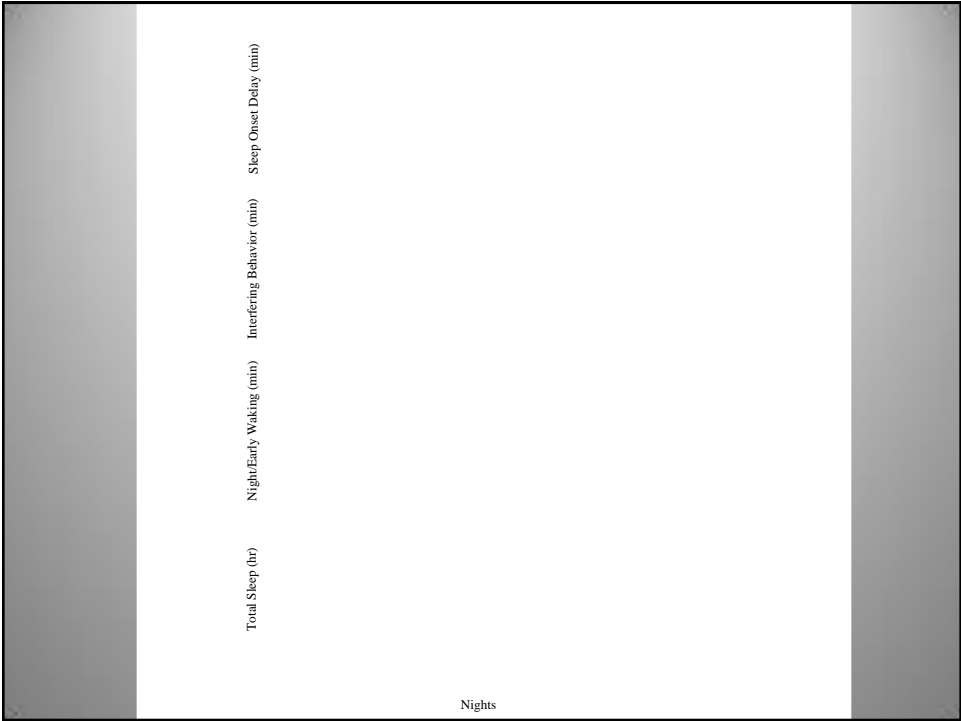
A typical case example

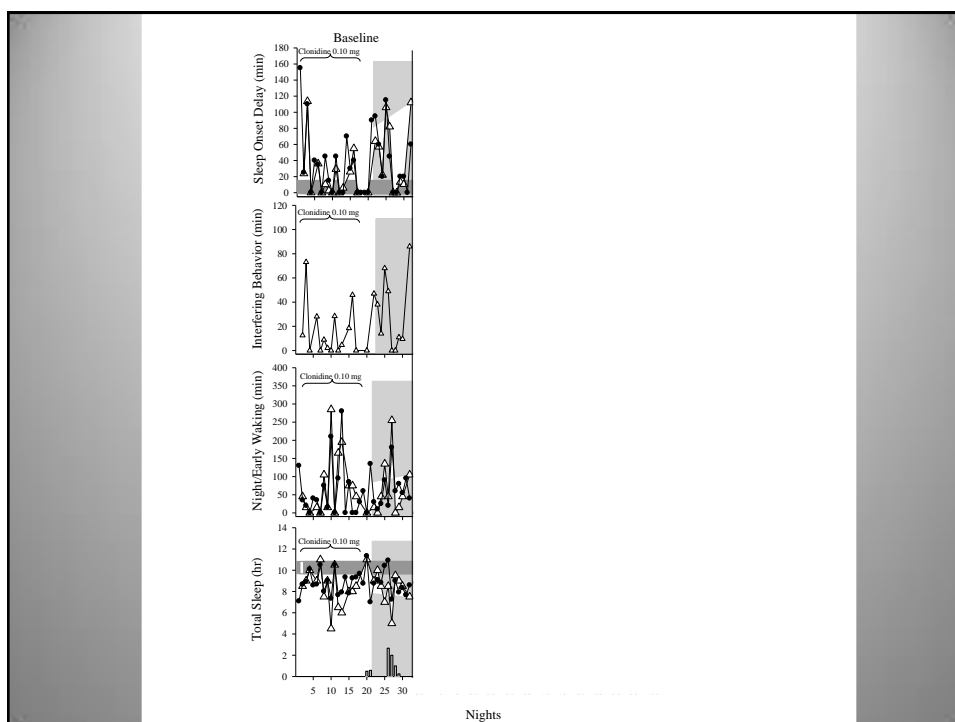
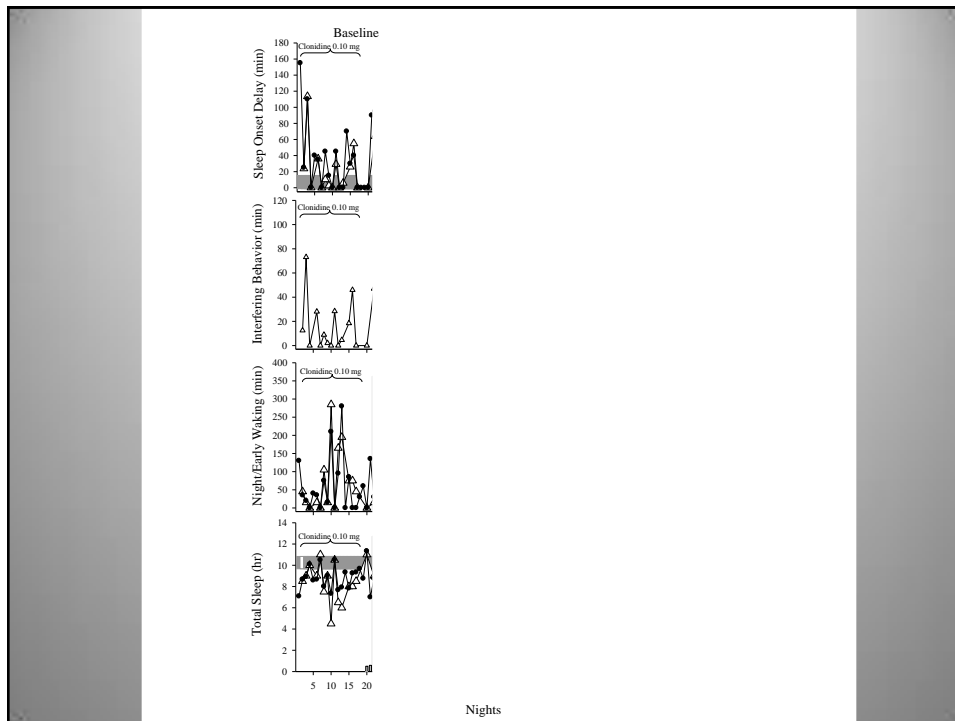
Ray

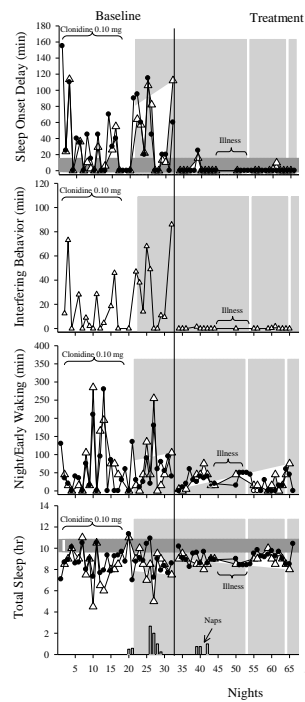
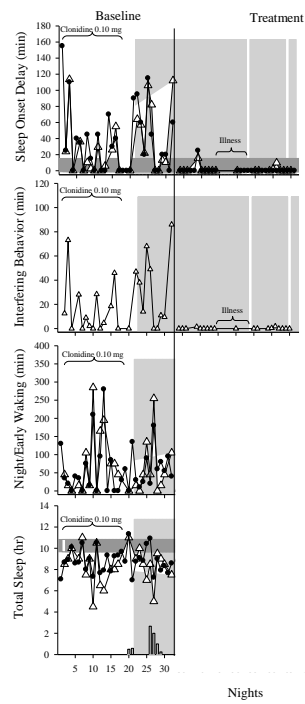
4-year-old-boy with Autism

Hyperactive

Parents tried multiple medications for sleep problems







*AN INDIVIDUALIZED AND COMPREHENSIVE APPROACH TO
TREATING SLEEP PROBLEMS IN YOUNG CHILDREN*

C. SANDY JIN, GREGORY P. HANLEY, AND LAUREN BEAULIEU

WESTERN NEW ENGLAND UNIVERSITY

Social Acceptability Survey (Parents)

Table 1

Questions	Walter	Andy	Lou	Average (Range)
1. Acceptability of assessment procedures	7	6	7	6.7 (6-7)
2. Acceptability of treatment	7	6	7	6.7 (6-7)
3. Improvement in sleep	7	7	7	7
4. Consultation was helpful	7	6	7	6.7 (6-7)

Note: Likert scale: 1 to 7. 1 (not acceptable, not satisfied, not helpful), 7 (highly acceptable, highly satisfied, highly helpful)

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Step 1: Develop Ideal Sleep Schedule

Step 2: Routinize Nighttime Routine

Step 3: Optimize Bedroom Conditions

Step 4: Regularize Sleep Dependencies

Step 5: Address Sleep Interfering Behavior

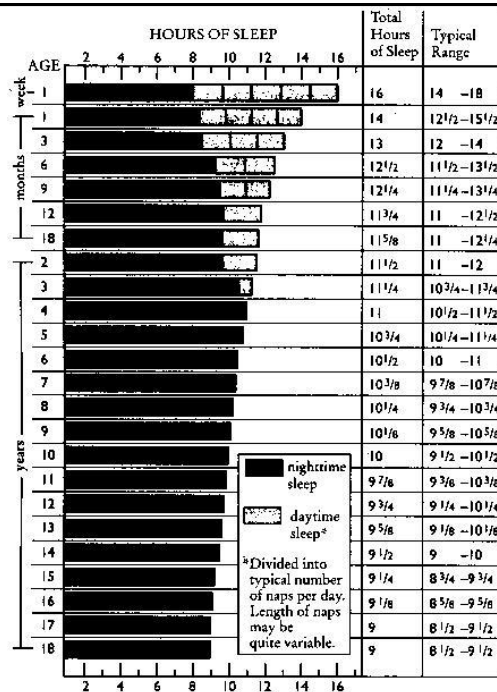
**Step 1:
Develop Optimal Sleep Schedule**

- Recognize of age-appropriate sleep amounts
- Recognize importance of current sleep phase and “forbidden zones”
- Recognize universal tendency to go to bed later and wake up later

Age-Based Sleep Averages:

Age	Total Sleep	Night Sleep	# Naps
2	11 hrs 30 min	9.5 hours	1 (2 hrs)
3	11 hrs 15 min	10 hours	1 (1hr15min)
4	11 hrs	10 -11 hours	0-1
5	10 hrs 45 min		
6	10 hrs 30 min		
9	10 hrs		
12	9 hrs 45 min		
15	9 hrs 15 min		
18	9 hrs		

Adapted from: *Solve Your Child's Sleep Problems*, Richard Ferber, Simon & Schuster, 2006



Sleep Scheduling

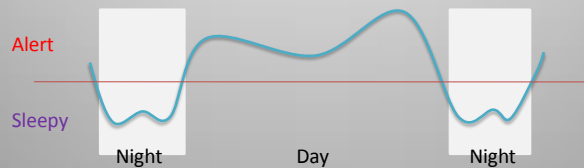
Cautions:

Difficulty falling asleep, staying asleep, or complying with nighttime routines may occur if child is expected to be in bed too long

Difficulty waking up or day time tiredness may be related to child being in bed for too short of a time

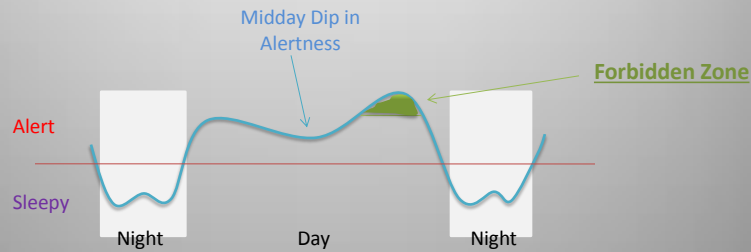
Implication: Select the right sleep total for child

When should the bedtime be scheduled?



Adapted from: *Solve Your Child's Sleep Problems*, Richard Ferber, Simon & Schuster, 2006

When should the bedtime be scheduled?



Adapted from: *Solve Your Child's Sleep Problems*, Richard Ferber, Simon & Schuster, 2006

When should the bedtime be scheduled?

Caution

Putting children to bed during the Forbidden Zone will increase the likelihood of

nighttime routine noncompliance,

sleep onset delays

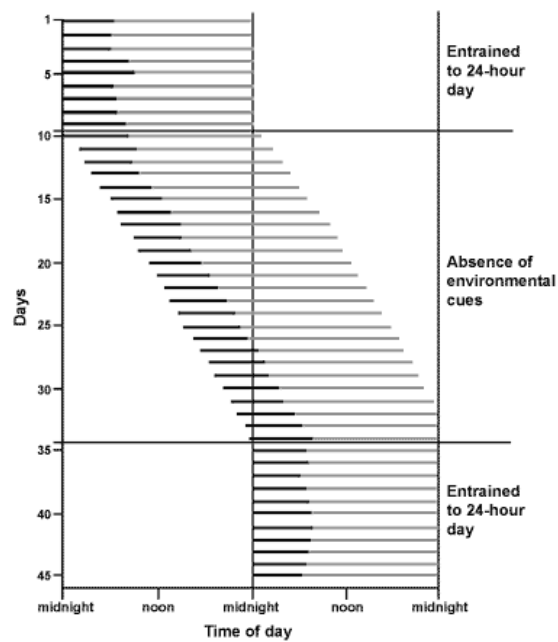
and

sleep interfering behavior

When should the bedtime be scheduled?

We have a tendency to go to bed later and wake up later because of our 24.2 hr clock

Artificial light and nighttime activity availability leads to a 25-hour clock



Copied from: *National Institute of Health (NIH) Sleep and Sleep Disorder's Teacher's Guide*

When should the bedtime be scheduled?

At the beginning of sleep treatment:

set the start of the sleep routine slightly later than when the child fell asleep the previous night

Then gradually transition sleep phase earlier

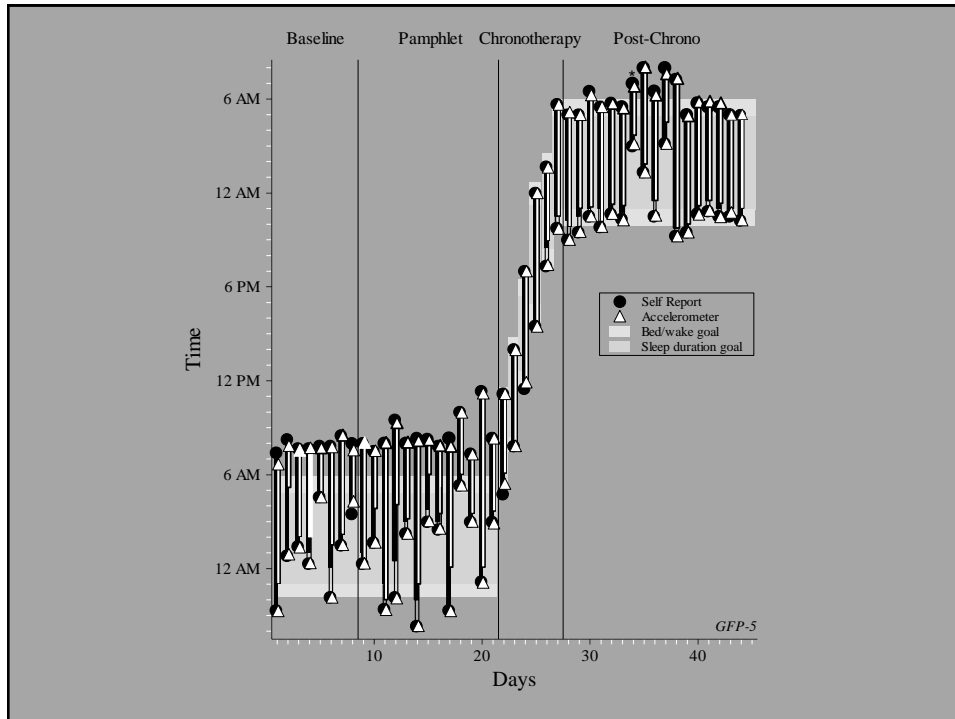
if child falls asleep within 15 min move bedtime 15 min earlier next night until desired bedtime is achieved (Piazza et al., 1991)

Extreme Sleep Phase Shift?

Consideration

Try **chronotherapy** if sleep phase is more than 4 hours past desirable sleep time:

Move sleep and awake times forward by 1 to 2 hours each night (larger leaps can be made with older children)



Your turn.

**Determine your child's sleep schedule at the start and end of treatment
(p. 2)**

Step 2: Routinize Nighttime Routine

**Develop a nighttime routine that occasions
“behavioral quietude”**

Try to implement it consistently across nights

Step 2: Routinize Nighttime Routine

Some emphases prior to bid goodnight

Activities progress from active to passive

Arrange choices on picture schedule

Make gradual changes in fun factor

avoid rich to barren context transition

Exercise/baths earlier in routine

Ambient light gets progressively dimmer

Light snacks without caffeine

Step 3: Optimize Bedroom Conditions

Cooler temperature

Indirect lighting only

Non-undulating noise

Best toys/preferred activities not visible

Nighttime Noncompliance Considerations

Tendency to not follow instructions or resist guidance to,
for example, put on PJs, brush teeth, or get in bed

Solutions:

- Start routine just prior to natural sleep phase
- Promote instruction following during the day
 - See steps on handout (e.g., name game, follow through, etc.)



Nighttime Noncompliance Considerations

Tendency to not follow instructions or resist guidance to,
for example, put on PJs, brush teeth, or get in bed

Solutions:

- Start routine just prior to natural sleep phase
- Promote instruction following during the day
 - See steps on handout
- Arrange big discrepancy in consequences for compliance vs. noncompliance to routine
 - Avoid DRA with extinction

Your turn.

Identify aspects of current pre-sleep routine that may inhibit sleep onset and commit to new routines more conducive with sleeping
(p. 3)

Adopt strategies to promote compliance with the nighttime routine
(p. 3)

and see pp. 9-10 after workshop for additional strategies

Step 4: Optimize Sleep Dependencies

Transitioning from
behavioral quietude to sleep
depends on stimuli associated with falling asleep

Stimuli that set the occasion for sleep must be there through the night because children **wake up** often during the night

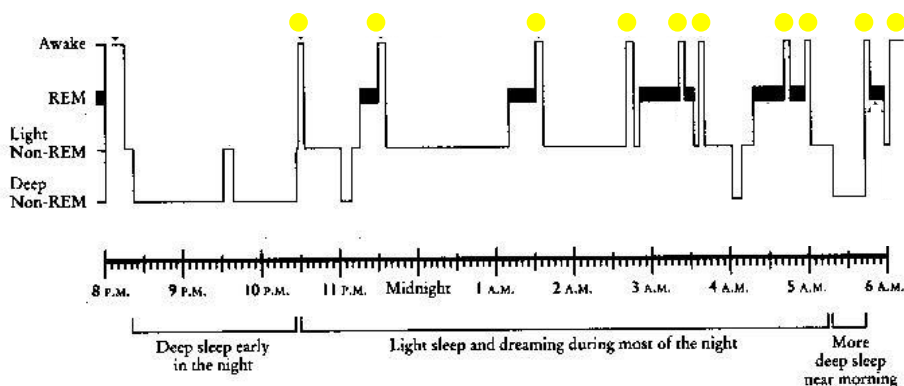


FIGURE 3. TYPICAL SLEEP STAGE PROGRESSION IN THE YOUNG CHILD

Optimizing Sleep Dependencies

Transitioning from behavioral quietude to sleep depends on stimuli associated with falling asleep

Problems:

Things that occasion sleep are not present when the child wakes up during the night = **Night Awakenings**

Things that occasion sleep are suddenly removed or inconsistently available = **Sleep Onset Delay** and possibly **sleep interfering Behavior**

Examples: TV, radio, books, bottles, "full belly," presence of another person, being rocked or patted, lights, fallen stuffed animal or blanket

Optimizing Sleep Dependencies

Occasion sleep with things that

don't require your presence,

can be there in the middle of the night, and

are transportable

(e.g., for vacations or nights at Grandparent's home)

Optimizing Sleep Dependencies

Good dependencies:

pillow,

blanket,

stuffed animal (with bed rails),

pacifier,

sound machine on continuous

Eliminate or fade “bad” ones and replace with “good” dependencies

Your turn.

Identify current sleep dependencies and commit to new ones that are easy to maintain, can be continuously available, and are transportable

(p. 4)

Step 5: Address Sleep Interfering Behavior

SLIB = Behaviors that interfere with behavioral quietude necessary for falling asleep

The big four are:

- leaving bed (curtain calls)
- crying / calling out
- playing in bed or in bedroom
(this includes motor or vocal stereotypy)
- talking to oneself

Step 5: Address (SLIB)

Be sure to first properly consider what the likely reinforcers are for the interfering behavior

Attention / Interaction

Food/drink

Access to TV or toys

Escape/avoidance of dark or of bedroom

Automatic reinforcers (those directly produced by the behavior)

Addressing SLIB

Part 1

Provide the presumed reinforcer prior to bidding the child good night

Addressing SLIB

Part 2

After bid goodnight, eliminate access to presumed reinforcer following IB

With socially mediated IB, options include:

Extinction, Progressive Waiting, Time-Based Visiting,
Quiet-Based Visiting, Quality Fading, or Bedtime Pass

With automatically-reinforced SLIB, we use:

Relocation of relevant materials
Blocking

Addressing SLIB

Time-Based Visiting

Visit your child at increasingly larger intervals after the bid good night and across nights (hopefully before IB occurs); during visit re-tuck them, bid good night, and leave.

Day	First visit	Second visit	Third visit	Fourth visit	Fifth visit	Sixth visit	Seventh visit
1	10 s	30 s	1 min	3 min	5 min	10 min	30 min
2	30 s	1 min	3 min	5 min	10 min	30 min	
3	30 s	3 min	5 min	10 min	30 min		
4	1 min	3 min	5 min	10 min	30 min		
5	1 min	5 min	10 min	30 min			
6	5 min	10 min	30 min				
7	5 min	30 min					

Addressing SLIB

Bed Time Pass

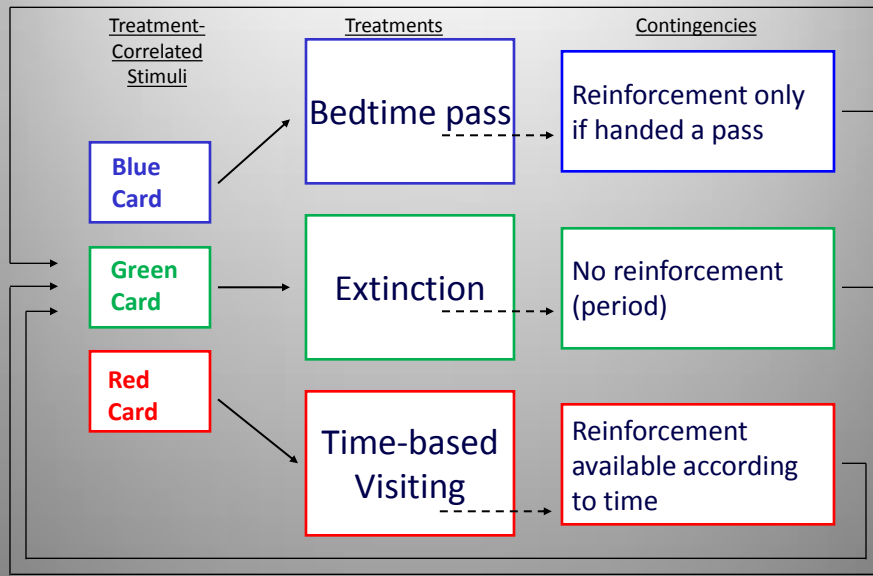
Give your child a *bed time pass* to be used as needed after the bid good night to have one request granted.

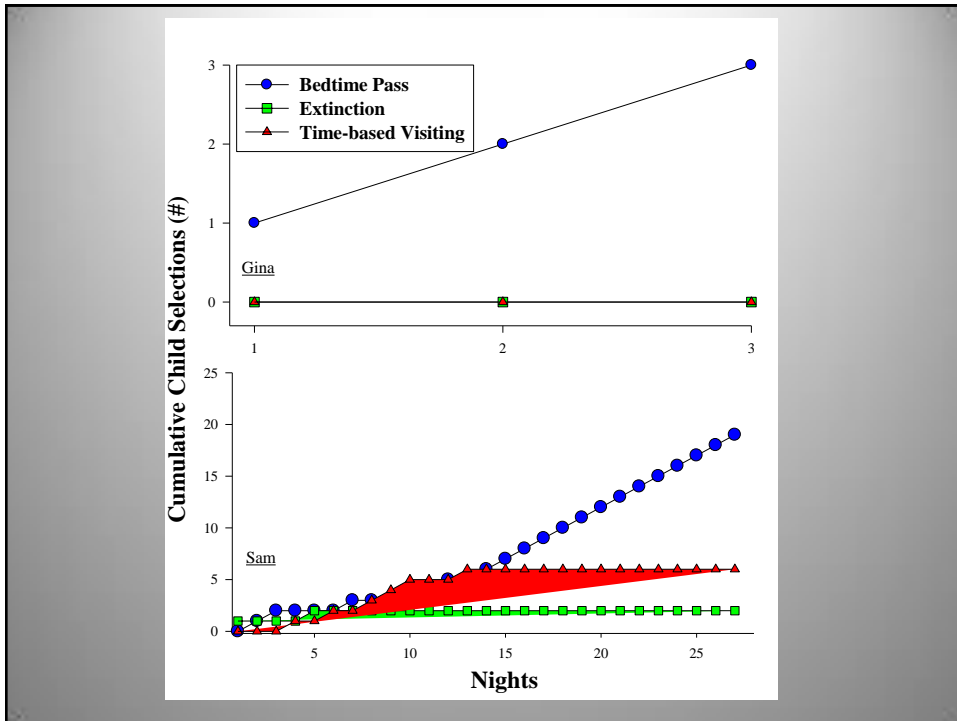
If # of IBs was high before you try this treatment, provide more than one bed time pass initially and then fade out the number each night.

**Results of Social Acceptability Questionnaire
Administered to Parents who Implemented Three
Strategies for Addressing Sleep Interfering Behavior**

		Gina		Sam	
		Mom		Mom Dad	
<i>Most Preferred</i>	→ 1	Bedtime Pass		Time-based Visiting Bedtime Pass	
	2	Extinction		Bedtime Pass Extinction	
	3	Time-based Visiting		Extinction Time-based Visiting	

**Just prior to bed, the children were allowed
to choose the treatment for each night**





Eliminating Interfering Behavior

My new favorite: **The Combo+**

Time-Based Visiting
and the **Bed Time Pass**
with dueling outcomes

+Hand in pass for something now or hold onto pass
and hand in at breakfast for something better

Addressing Night Awakenings

Should be resolved with appropriate sleep schedule and healthy sleep dependencies

If not, address issues related to temperature, food, light, noise, incontinence, nighttime reinforcers

If not, we actively teach child to know when it is okay to get up for the day

usually with moon/sun clocks

Last resort: Scheduled awakenings

Your turn.

Identify possible reinforcers for interfering behaviors and identify a means of providing them in some way that will promote “behavioral quietude”

(p. 5)

Key Considerations for Good Sleeping

sleep schedule

nighttime routines

sleep contexts

sleep dependencies

reinforcers for sleep interfering behavior

Implications

**Chronic medication use
is not the solution
for sleep problems
exhibited by children with autism**

(or for your sleep problems)

For you to consider...

Start on Friday

Exercise

Avoid caffeine

**Reflect on the day and tomorrow *before* you are in bed
and**

For you to consider...

Address sleep onset delay by:

- 1. Making your bedtime 1 hr. later than usual,**
- 2. Getting out of bed if not asleep within 10-15 min, and sitting in chair & read a literary classic for 15 min or until drowsy,**
- 3. Gradually adjusting sleep and wake times to desired times.**



Freedom from sleep problems is possible and probable with:

Individualized assessment

Individualized and comprehensive treatment:

Step 1: Develop Ideal Sleep Schedule

Step 2: Routinize Nighttime Routine

Step 3: Optimize Bedroom Conditions

Step 4: Regularize Sleep Dependencies

Step 5: Address Sleep Interfering Behavior

Thank you.

**Good luck with all that you do for all
who you teach and provide care**

Contact info.:

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