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## An Interprofessional, Tailored Behavioral Intervention for Sleep Problems in Autism: Use of Sensory Data to Inform Intervention

Rebecca Sinko, MS, OTR/L  
*Thomas Jefferson University*

Sarah E. Kauper, BS, OTS  
*Thomas Jefferson University*

Phoi Truong, BS, OTS  
*Thomas Jefferson University*

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Rachel L. Dumont, BS, OTS  
 Thomas Jefferson University  
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Amy L. Miller, BS, OTS  
*Thomas Jefferson University*

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## Authors

Rebecca Sinko, MS, OTR/L; Sarah E. Kauper, BS, OTS; Phoi Truong, BS, OTS; Rachel L. Dumont, BS, OTS; Amy L. Miller, BS, OTS; Roseann C. Schaaf, PhD, OTR/L, FAOTA; Margaret Souders, PhD, CRNP; Eric D. Bull, OTS; Denise G. Doria, OTS; Jamie A. Frank, OTS; and Jenna R. Grady, OTS





# An Interprofessional, Tailored Behavioral Intervention for Sleep Problems in Autism: Use of Sensory Data to Inform Intervention

Rebecca Sinko<sup>1</sup>, M.S., OTR/L, Sarah Kauper<sup>1</sup>, B.S., OTS, Phoi Truong<sup>1</sup>, B.S., OTS, Rachel Dumont<sup>1</sup>, B.S., OTS, Amy Miller<sup>1</sup>, B.S., OTS, Roseann Schaaf<sup>1</sup>, PhD, OTR/L, FAOTA, Margaret Souders<sup>2</sup>, PhD, CRNP,

with contributions from: Eric D. Bull<sup>1</sup>, OTS; Denise G. Doria<sup>1</sup>, OTS; Jamie Frank<sup>1</sup>, OTS, Jenna Grady<sup>1</sup>, OTS

<sup>1</sup>Thomas Jefferson University, Department of Occupational Therapy; <sup>2</sup>University of Pennsylvania, School of Nursing

## Background

Prevalence of ASD has increased to 1 in 68 children (CDC, 2014).

Chronic severe insomnia (sleep disturbance) is one of the most common co-occurring conditions in children with ASD ( 60-80% ) (Liu et al., 2006; Souders et al., 2009; Wiggs & Store, 2004).

Causes are multi-factorial including behavioral, biological and cultural mechanisms (Kotagal & Broomall, 2012; Malow & McGrew, 2008).

Parents report that both sensory sensitivities (to the environment) and anxiety may be contributing factors (Souders et al., 2009).

Occupational therapists can address these factors and help improve sleep quality by implementing sensory and environmental strategies.

## Purpose

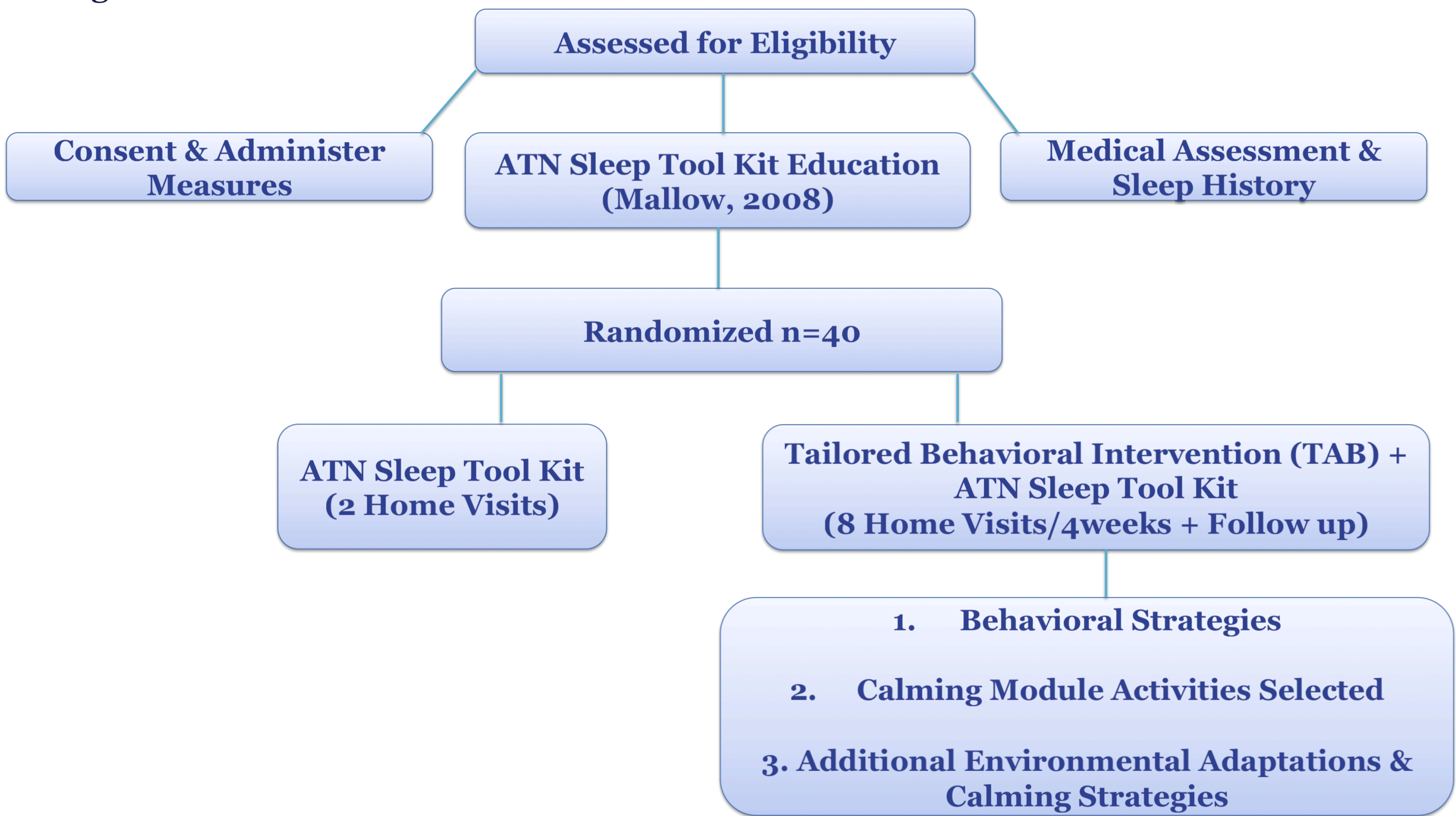
The purpose of this poster is to demonstrate how Sensory Profile data informed occupational therapy sleep interventions for two participants as part of an Interprofessional Tailored Behavioral Intervention study.

## Methods

### Comparative Effectiveness Design

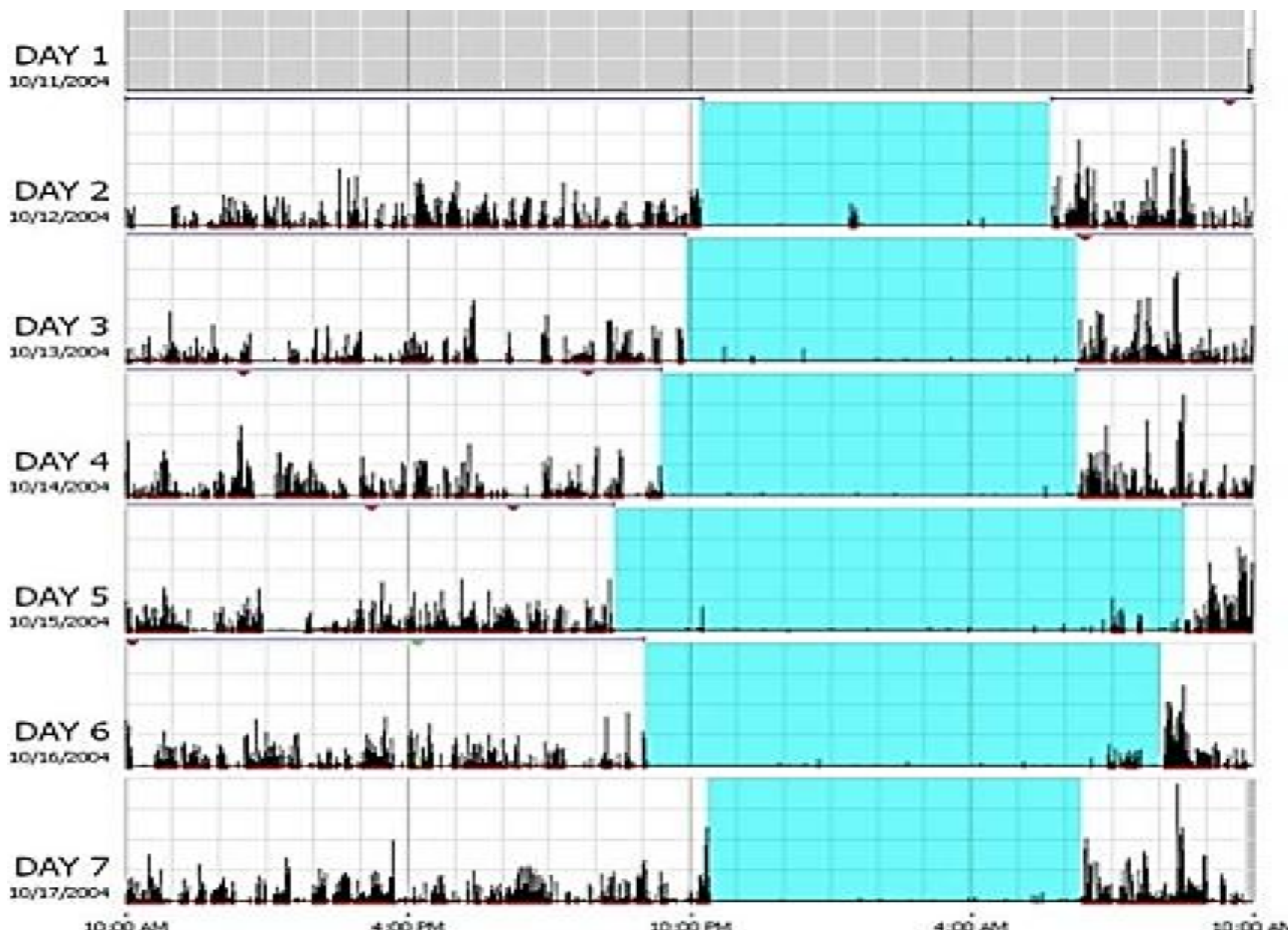
#### Eligibility Criteria:

- Autism Dx (ADOS)
- Insomnia (CSHQ, Actigraphy)
- Ages: 6-10



#### Measures:

- Anxiety Measures:** Pediatric Anxiety Rating Scale
- Sensory Measures:** Sensory Profile
- Sleep Measures:** Sleep Diary, Child Sleep Habits Questionnaire (CSHQ), Actigraphy



Actigraphy Example

(National Sleep Foundation, 2015)

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## Case 1: Male, 9 years-old

| Sensory Profile Subscales   | Typ. Perf. | Prob. Diff. | Def. Diff. | Specific behaviors noted from parent report on Sensory Profile                       | Strategies used to improve sleep   |
|---|------------|-------------|------------|--|--|
| Auditory Processing   |            |             | ✓          | Sensitivity; Distracted around high levels of noise                                  | Quiet sleep environment  |
| Visual Processing   | ✓          |             |            |  |  |
| Vestibular Processing   |            |             | ✓          | Movement seeking behaviors   | Heavy blanket; Calming Module activities during hour before bed: Observing Your Breath, Yoga Poses for Insomnia, Progressive Muscle Relaxation |
| Touch Processing  |            |             | ✓          | Sensitive to tooth-brushing and some fabrics; Seeking behaviors for certain textures | Earlier nighttime hygiene routine to offset arousal  |
| Multisensory Processing   |            |             | ✓          | Attention difficulties; Unaware in busy environment; Hangs on people or objects      | Decrease stimuli in sleep environment (minimal toys)   |
| Oral Sensory Processing   |            | ✓           |            |  |  |
| Sensory processing related to endurance/ tone                               |            |             | ✓          | Decreased endurance; Tires easily  | Increase activity level during day/after school  |
| Modulation related to body position and movement                            | ✓          |             |            |  |  |
| Modulation of movement affecting activity level                             | ✓          |             |            |  |  |
| Modulation of sensory input affecting emotional responses                   |            |             | ✓          |  | Behavioral intervention  |
| Modulation of visual input affecting emotional responses and activity level |            |             | ✓          |  | Environmental adaptation   |
| Emotional/social response   |            |             | ✓          |  | Parent education   |
| Behavioral outcome of sensory processing                                    |            |             | ✓          | Difficulties with changes in routine   | Use of visual schedule & bedtime pass  |
| Items indicating thresholds for response                                    |            |             | ✓          |  | Use of visual schedule and behavioral intervention   |

## Case 1 Outcomes

### Pre Intervention Sleep Behavior

- Sleeps with parents
- Increased sleep latency (28 minutes to fall asleep)
- Wakes during night/restless (477 sleep minutes; 117 wake minutes)
- Wakes at 5am

### Post Intervention Sleep Behavior

- Sleeps in own room
- Decreased sleep latency (21 minutes)
- Decreased waking during night (485 sleep minutes; 65 wake minutes)
- Wakes at 5-6am with dad

## Case 2: Male, 8 years-old

| Sensory Profile Subscales   | Typ. Perf. | Prob. Diff. | Def. Diff. | Specific behaviors noted from parent report on Sensory Profile                  | Strategies used to improve sleep  |
|---|------------|-------------|------------|---|---|
| Auditory Processing   |            |             | ✓          | Sensitivity; Distracted around high levels of noise                             | Reinforce quiet sleep environment   |
| Visual Processing   |            | ✓           |            | Some difficulty with visual discrimination                                      | Simple visual schedule; Use of verbal cues  |
| Vestibular Processing   |            |             | ✓          | Movement seeking behaviors  | Increase activity level/ heavy work exercises after school; Deep pressure massage before bed; Calming Module activities during hour before bed: Observing Your Breath, Yoga Poses for Insomnia; Quiet Reading |
| Touch Processing  |            | ✓           |            |   |   |
| Multisensory Processing   |            |             | ✓          | Attention difficulties; Unaware in busy environment; Hangs on people or objects | Decrease stimuli in sleep environment (minimal toys)  |
| Oral Sensory Processing   |            | ✓           |            | Smells non-food objects   | Use of scented candle during massage  |
| Sensory processing related to endurance/ tone                               |            | ✓           |            |   |   |
| Modulation related to body position and movement                            | ✓          |             |            |   |   |
| Modulation of movement affecting activity level                             | ✓          |             |            |   |   |
| Modulation of sensory input affecting emotional responses                   |            |             | ✓          | Rigid rituals and routines; Difficulty with changes                             | Use of visual schedule; Bed time pass; Behavior chart; Social story   |
| Modulation of visual input affecting emotional responses and activity level | ✓          |             |            |   |   |
| Emotional/social response   |            |             | ✓          | Poor frustration tolerance; Anxious   | Parent education  |
| Behavioral outcome of sensory processing                                    | ✓          |             |            |   |   |
| Items indicating thresholds for response                                    |            |             | ✓          | Deliberately smells objects   | Sleeping with mom's pajamas around pillow   |

## Case 2 Outcomes

### Pre Intervention Sleep Behavior

- Sleeps in brother's room with mom
- Increased sleep latency (47 minutes to fall asleep)
- Wakes during night/restless (209 sleep minutes)
- Early bedtime/early wake time

### Post Intervention Sleep Behavior

- Sleeps in own room
- Decreased sleep latency (12 minutes)
- Decreased waking during night (511 sleep minutes)
- Later bedtime/later wake time



## References

- Center for Disease Control [CDC]. (2014). Prevalence of autism spectrum disorder among children aged 8 years—Autism and developmental disabilities monitoring network, 11 sites, United States, 2010. *Morbidity and Mortality Weekly Report*, 63(SS 2), 1-21. Retrieved from <http://www.cdc.gov/mmwr/PDF/ss/ss6302.pdf>
- Kotagal, S., & Broomall, E. (2012). Sleep in children with autism spectrum disorder. *Pediatric Neurology*, 47(4), 242-251. doi:10.1016/j.pediatrneurol.2012.05.007
- Liu, X., Hubbard, J. A., Fabes, R. A., & Adam, J. B. (2006). Sleep disturbances and correlates of children with autism spectrum disorder. *Child Psychiatry and Human Development*, 37(2), 179-191. doi:10.1007/s10578-006-0028-3
- Malow, B. A., & McGrew, S. G. (2008). Sleep disturbances and autism. *Sleep Medicine Clinics*, 3(3), 479-488. doi:10.1016/j.jsmc.2008.04.004
- National Sleep Foundation (2015). Sleep assessment & evaluation: Sleep center / lab tools. In J. A. Kram, M. H. Kryger, J. Ojile, J. F. Pagel, & E. M. Wickmire (Eds.), *The sleep disorders* (Chapter 1). Retrieved from <http://sleepdisorders.sleepfoundation.org/chapter-1-normal-sleep/sleep-assessment-evaluation-sleep-center-lab-tools/>
- Souders, M. C., Mason, T. B. A., Valladares, O., Bucan, M., Levy, S. E., Mandell, D. S., Weaver, T. E., & Pinto-Martin, J. (2009). Sleep behaviors and sleep quality in children with autism spectrum disorders. *Sleep*, 32(12), 1566-1578.
- Wiggs, L., & Stores, G. (2004). Sleep patterns and sleep disorders in children with autism spectrum disorders: Insights using parent report and actigraphy. *Developmental Medicine & Child Neurology*, 4(6), 372-380. doi: 10.1017/S0012162204000611