Targeting Sleep Problems as an Inroad Toward Improving the Developmental Course of Anxiety and Depression among Adolescents

Dana L. McMakin, Ph.D.
Assistant Professor of Psychiatry

Melissa M. Milbert, MS
Psych Specialty Counselor II

University of Pittsburgh, School of Medicine
Western Psychiatric Institute and Clinic
Agenda

• Sleep in adolescence
• Correlates and consequences of insufficient sleep
• Sleep as it relates to anxiety and depression in adolescence
• How to intervene: Case examples
• Conclusions
Agenda

- Sleep in adolescence
- Correlates and consequences of insufficient sleep
- Sleep as it relates to anxiety and depression in adolescence
- How to intervene: Case examples
- Conclusions
Are teens sleep-deprived?

- Need for sleep remains constant, about 9 hrs (Carskadon & Acebo, 2002)
- Average teen gets 7.5 hrs of sleep per night (National Sleep Foundation, 2006)
  - Ranges from 8.4 hrs for 6th grade to 6.9 hrs for 12th grade
- Percentage of teens getting <7 hrs of sleep increases with age
  - 57.7% in 9th grade versus 78.2% for 12th grade (Eaton et al., 2010)
School start times

- Wolfson et al., 2007: middle school start times study
  - 2 schools: early-starting (7.15 am) and late-starting (8.37 am)
  - Sample of 205 7th and 8th graders
  - Compared sleep habits between both groups
Why are teens sleep-deprived?

(1)

- Psychosocial factors
  - Decreased parental monitoring
  - Academic demands
  - Other activities: social, extracurricular, employment
Why are teens sleep-deprived?

(2)

• Puberty impacts sleep regulation?
  – Onset of puberty triggers a preference for eveningness (Carskadon et al., 1993)
  – Daytime sleepiness?

• Consider this pattern in history versus contemporary society…
SUMMARY:
A small biological change at puberty can lead to a spiral of negative effects

- Late night/erratic schedules ⇒ Sleep Deprivation
  ⇒ erodes mood and motivation
  ⇒ greater stress and affective problems
  ⇒ interferes further with sleep/arousal regulation
  ⇒ greater difficulty falling asleep

- Social context that amplifies the biologic change ⇒ a torrential spiral?
Agenda

• Sleep in adolescence
• **Correlates and consequences of insufficient sleep**
• Sleep as it relates to anxiety and depression in adolescence
• How to intervene: Case examples
• Conclusions
Correlates of insufficient sleep (1)

• Behavioral
  – **Daytime sleepiness** (National Sleep Foundation, 2006)
    • 50% teens report feeling too tired/sleepy
    • Over 20% teens report falling asleep in school/while doing HW at least 1x/wk
  – **More caffeine consumption** (National Sleep Foundation, 2006)
  – **Greater likelihood of non-alcoholic drug use** (Roberts et al., 2009)
Correlates of insufficient sleep (2)

- Psychosocial
  - Lower self-esteem & life satisfaction, more interpersonal problems, decreased sense of control
  - Sleep disturbance in clinically depressed or anxious teens
  - More depressive symptoms in non-clinical populations
    - Longitudinal study showed that reduced sleep predicted depressive symptoms (Roberts et al., 2009)
Correlates of insufficient sleep (3)

• Academic
  – Lower grades—perhaps related to behavioral and psychosocial correlates of insufficient sleep?
Consequences of insufficient sleep?

- Most data is correlational
- Some longitudinal data
- Very little experimental data
  - Notable exception includes recent work from a study led by Dr. Peter Franzen (McMakin, Cousins, Dahl, Forbes, Silk, and Franzen, In preparation) demonstrating that experimentally manipulating sleep among healthy adolescents causally impacts emotional functioning, particularly in peer contexts
Agenda

• Sleep in adolescence
• Correlates and consequences of insufficient sleep
• Sleep as it relates to anxiety and depression in adolescence
• How to intervene: Case examples
• Conclusions
OF COURSE THEY’RE NOT SLEEPING WELL, THEY’RE ANXIOUS!

OF COURSE THEY’RE ANXIOUS, THEY’RE NOT SLEEPING WELL!
Sleep, Anxiety and Depression in Youth

• Children with Anxiety disorders enter adolescence with several additional vulnerabilities that can amplify both the causes and consequences of sleep problems:
  – increased vigilance,
  – heightened physiological arousal,
  – a predilection toward bedtime worries and ruminations

• Anxiety as a risk factor for Depression

• Depression rates soar during adolescence
What do we know about sleep and youth anxiety?

• High prevalence of sleep problems among anxious youth (Alfano et al., 2010; Alfano et al., 2009; Hudson et al., 2009; Storch et al., 2008; Gregory et al., 2005):
  – As high as 90% report one sleep problem, and 55% report >1
  – Trouble initiating sleep
  – Trouble maintaining sleep
  – Refusal to sleep alone
  – Nightmares
  – Go to bed later
  – Get less sleep on weekdays
  – Greater cognitive arousal at bedtime

• NOT just a consequence of disorder
Sleep and Anxiety Treatment Response

Very much improved: 68% above clinical cut

Much improved: 86% above clinical cut

Preliminary data from CATS Study (PI Neal Ryan) presented at Association for Behavioral and Cognitive Therapies: McMakin, et al., 2011
Conclusions

- Sleep is a frequent problem during adolescence
- Sleep impacts social, emotional and cognitive functioning (and vice versa)
- Sleep is not simply a consequence of affective disorders
- Sleep is a risk factor for depression and other affective consequences
- Sleep may not entirely resolve by targeting affective symptoms and therefore may be an ongoing risk factor even following treatment for other problems
- Sleep may offer an additional inroad toward improving mental and behavioral health among adolescents
Agenda

• Sleep in adolescence
• Correlates and consequences of insufficient sleep
• Sleep as it relates to anxiety and depression in adolescence
• **How to intervene: Case examples**
• Conclusions
SLEEPING TIGERS

Thoughts, feelings, and behaviors at bedtime

- Individual motivation (Personal benefits of sleep)
- Good habits (day and night)
- Establishing a regular schedule
- Restricting media use at night (TV, internet, iPod, etc.)
- Savoring

Sleep Assessment

• Common sleep problems:
  – Trouble going to bed
  – Trouble falling asleep
  – Night-time waking
  – Trouble with morning wake-up
  – Irritable, sleepy during the day
  – Erratic sleep schedules
  – (sleep walking, enuresis, nightmares)

• Onset, triggers, intensity, frequency, duration, distress, impairment, protective factors

• Family, developmental, environmental information
Case Conceptualization: Domains

1. Hypervigilance and difficulty self-soothing

2. Difficulty disengaging from social reward

3. Daytime lifestyle, habits, schedule
Framework

• Intrinsic motivation

• Developmental considerations: Balancing Autonomy and Dependency

• Family considerations: Role of parent/caregiver
Menu of Strategies

- Stimulus Control
- Targeting sleep-interfering media use
- Daytime habits (e.g. caffeine, physical activity, naps)
- Light/dark cues
- Regularizing schedule
- Brisk Wake-Up
- Savoring and switching
- Cognitive Challenges
Sleep Problems:
- Trouble going to bed
- Trouble falling asleep
- Night-time waking
- Sleepwalking, nightmares, enuresis
- Trouble with morning wake-up
- Erratic Sleep schedules
- Irritable, sleepy during the day

Outcome Sleep

Contextual Factors
- Environmental
- Family
- Cultural
- Social
- Developmental

Case Conceptualization
- Vigilance-Avoidance
- Disengaging from Social/Other Rewards
- Daytime troubles; Slow waking, irritability
- Mastery success

Therapeutic Momentum
- Alliance
- Motivation
- Engagement

Treatment Targets
- Comorbidities
- Coping Tendencies
- Strengths

Motivation

Engagement

Mastery success

Domain 1: Vigilance-Avoidance

Domain 2: Trouble Disengaging from Social/Other Rewards

Domain 3: Daytime troubles; Slow waking, irritability
Strategies: Stimulus Control

- Dick Bootzin, U. Arizona
  - Go to bed when sleepy
  - Bed is for sleeping only
  - Get out of bed after 20 minutes
  - Return to bed only when sleepy
Strategies:
Targeting Sleep-Interfering Media Use

- TV in bed
- Cell phones
- Text Messages
- Internet / Facebook / Twitter

....but WHY?? (e.g., social contact versus soothing and cues of safety?)
Strategies: Daytime Habits

- Naps
- Caffeine
- Physical Activity
- Time for worry?
Strategies: Regularizing Schedule

- Less than 2 hours difference between the weekday wakeup/sleep time relative to the weekend wakeup/sleep time
- Bring bedtime forward by 20-30 minutes per week
- Fix wake-up time (easiest to control)
- Collaboratively set realistic adjustments each week, sleep diary to monitor change, praise/reward when change is implemented, problem solving
Strategies: Light-Dark Cues

‘Even moderate light intensities, similar to indoor intensities, are able to cause substantial suppression of melatonin production’
Darkness

- A powerful cue
- Triggers a cascade of biology that will help you fall asleep
- Consider *not* turning on major lights if you get up in the night (eg. to use the restroom).
'Lights out' Cue

• Involves selecting a particular time prior to the targeted bedtime when the young person alters the light to which they are exposed to facilitate the transition to bedtime.
• Turn down the lights
• Refrain from the use of computers, text messaging, cell phones etc
Strategies: Light-Dark Cues

- Sun: The strongest source of light (more than 10,000 lux) even on a cloudy day
- Exposure to light helps to reduce sleepiness/fatigue in the day
- On waking exposure to light helps to reduce sleep inertia
Strategies: Brisk wake-up routine

- Sleep is like a dimmer, it’s not a lightswitch (it takes time to wake up)

- ‘Sleep inertia’ is the feeling of grogginess occurring for the first hour upon waking

- These feelings are normal. They indicate the transition from sleep to wake.

- They do not necessarily indicate you didn’t get enough sleep!! Everyone experiences sleep inertia almost every morning!
The **WAKE UP** Routine

- **W**ash face and hands with cold water
- **A**void snoozing
- **K**eep active for the first hour
- **E**xpose yourself to sunlight
- **U**pbeat music
- **P**hone a friend
Are there any downsides to getting up at the same time everyday?

What are the obstacles to implementing the brisk wakeup?
Fred Bryant (2003, 2006): Savoring is the ability to attend to, appreciate and enhance positive experiences in our lives through…

- Anticipation
- Engagement
- Reminiscing

- A mirror-image (positive version) to the process of rumination?
Strategies: Savoring and Switching

Sleep

– Worry and rumination at bedtime: common problem in individuals with difficulties going to sleep
– Ruminative worries at bedtime tend to activate threat/vigilance/arousal: incompatible with sleep
– Savoring positive experiences may displace ruminations: activation of positive thoughts and feelings (may lower vigilance and threat)

• Mental Television
The Sleeping TIGERS Manual is currently in development. For further information or the finished published manual in the future please contact:

Dr Dana McMakin
mcmakind@upmc.edu
ACKNOWLEDGMENTS

• Investigators
  Melissa M. Milbert
  Marcus Min
  Tracey Ann Stufft
  Laura J. Trubnick
  Jessica Wilson
  Ron Dahl
  Neal Ryan
  Allison Harvey
  Erika Forbes

• Research Staff and Clinicians
  Jennifer C. Cousins
  Candice Croft
  Matt Georg
  Ann Gill
  Jennifer Jakubcak
  Karen Jakubowski
  Jennifer Kurtzman
  Marcie McCullough
Thank you!
We welcome referrals to our ongoing intervention studies…

The Child Anxiety Treatment Study and Sleeping TIGERS:

- **Investigators**: Neal Ryan, Ron Dahl, Jennifer Silk, Cecile Ladouceur, Erika Forbes, Greg Siegle, Dana McMakin
- **Clinicians**: Melissa Milbert, Laura Trubnick, Dana McMakin
- **Who**: Youth with anxiety, ages 9-14
- **Contact**: Sherri Karas 412-383-8182

The PASS Study for Teen Depression

- **Investigators**: Dana McMakin (mentors: Ron Dahl, David Brent, Greg Siegle)
- **Clinicians**: Melissa Milbert, Kara Colaizzi, Dana McMakin
- **Who**: Youth with depression, ages 12-16
- **Contact**: Candice Croft 412-383-5190
• This presentation may not be reproduced without written permission from the author: mcmakind@upmc.edu

• All rights reserved, 2012