

Adolescent Sleep-Problems & Solutions

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Are sleep, learning, & mental health problems linked?

- Below are 3 of the biggest health problems in adolescents
- Teen sleep deprivation has doubled in the last 15 years from 35% to 70%
- Teen mental health problems increasing @ 27% per year= a tripling since 2008
- Meanwhile learning outcomes are heading south. PISA data-learning outcomes in our 15 yr olds dropped from top 12, to 39th of 41 high/middle income countries
- Teens in my sleep clinic are tired, AND most have mood &/or learning issues BUT is there a linkage?
- Well yes, because when I optimise their sleep patterns & treat their sleep disorder, their moods improve as does their ability to learn. So this makes them (& their parents & teachers) HAPPIER
- So this is practical evidence of a link

Cane Toad Testicle size

- Teenage boys who have inadequate &/or irregular sleep have smaller testicles than boys with good sleep
- This is the BEST thing you will hear today about bad sleep
- Sleep deprivation is bad for student brains & bad for their bodies
- Good sleepers are the equivalent of Queensland cane toads. They are stronger, smarter, run faster, survive longer, & are resilient!

Talk outline

- General points about sleep deprivation-to show you that it is real, and TO CONVINCING YOU, should you need convincing
- How sleepy are Oz teens & why is sleepiness increasing
- How electronic screens sabotage sleep
- Effects of sleep deprivation on learning
- The sometimes confusing relationship between sleep & mood
- Meet 2 patients . The 2 extremes. The good & the bad. My success & my failure.
- Explanation of specific sleep problems (not just a lack of sleep)
- Role of schools in sleep health
- Practical treatment strategies for all of you & how I can help further if needed

Some unexpected topics !

- Unwanted teen pregnancies
- Classroom ghosts
- Altered body image
- Social jetlag
- Futile learning
- Infomania
- Conditioned arousal
- Brain hacking
- Testicles
- Digital dinosaurs
- 3 amazing women (no amazing men)
- Even some gibberish
- Digital sabbath

Myths, Misconceptions & Gimmicks.

- Drugs, & other “magic bullets” for sleep . Drugs are BLUNT INSTRUMENTS and none enhance naturalistic sleep

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Myths & fake news-real examples

- “I always turn my smartphone off at night”
- “I use my phone in bed to calm me down & help me get off to sleep”
- “I never use any electronic devices after lights out on school nights”
- “I am not tired, I’m just sick of you telling me what to do/treating me like a baby/stressed/got a lot on/you just don’t understand”
- “I have 5 hours of homework every night, so that’s why I can’t get to sleep on time”
- “If you don’t let me keep my phone in the bedroom at night my life will be over”
- “We understand that the overuse of our devices by young people is causing sleep deprivation & device dependency. We are working with our developers to try and reduce device usage”

The “3 pillars” of good teen health

- Good sleep
- Regular exercise
- Good nutrition
- These together protect mental & physical health, and reduce the chance of a crisis at times of elevated stress

The most googled personal question worldwide is...

- We are all tired (& getting tireder)
- Teens are tireddest age group of all

The Google logo is displayed in its characteristic multi-colored font (blue, red, yellow, green, blue, red).

why am i |

why am i **always tired**

How sleepy are our kids ?

- 65% of 9-10 year olds have chronic sleep deprivation that impairs their maths & science learning. 5th globally
- Grattan report. One in three primary school students were “PASSIVELY INATTENTIVE” in class & not engaged in learning irrespective of teacher’s level of experience. Fly under teacher radar & thus termed “CLASSROOM GHOSTS”. The inattentive group trended towards later bedtimes & less sleep (& we already know smart kids sleep longer & better)
- Smart students sleep longer & better than not so smart students

Australian children among the sleepest

May 10, 2013

Read later



Dan Harrison

Health and Indigenous Affairs Correspondent

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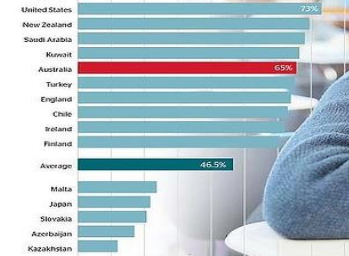
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Nothing off

Sleep deprivation in pupils taking maths and science tests aged 9 and 10



source: euronews.com

How sleepy are Oz teens & at what cost?

- 70% are chronically sleep deprived on school days
- Doubled in last 15 years
- Australia is 3rd worst globally

Multiple factors conspire to sabotage teen sleep - the “perfect storm”

Multiple factors conspire to limit sleep

Clash of physiology & reality

“Normalisation” of teenage sleepiness

- **Screens, social connectedness, FOMO & FOSO (powerful addictions)**
- **Late body clocks & non flexible school starting times**
- Part time jobs
- **Homework, study & extra curricular activities-over scheduling-too busy to sleep**
- Ambition, pressure, stress & high expectations of our teens
- **The gap between social norms & scientific data**
- Competition of wakefulness (“sleep is for wimps”)
- Sleep is regarded as precious in babies, toddlers and pre schoolers but not in teens, so has low priority
- Reduced parental control
- Increased mental health problems

Effects go way beyond tiredness, moodiness, & academic failure

- Altered body image
- Addictions – drugs, alcohol & screens
- Poor food choices & obesity
- High cortisol (stress hormone)
- More infections & slower recovery
- School lateness & absenteeism
- Cyber & non cyber bullying
- Depression (1.5 fold)
- Anxiety
- Reduced testicle size
- Suicide - 1 hour lost sleep=58% increase in teen suicide
- Motor vehicle accidents=27% drop with late school start times
- Lower self esteem
- Self harming
- Unplanned pregnancy
- Poor stress coping
- Family relationship breakdown
- Emotionality
- Loss of sense of humour
- Impaired ethical & moral judgement

“All petrol no brakes”-the nocturnal teen brain-a strange organ!!

- Limbic system, the brain’s emotional regulator, “fires up” at night, causing overly emotional responses to often trivial issues
- The pre frontal cortex, the “rational brain”, shuts down when tired & is relatively under developed in teens
- Teens make emotional & risky decisions, driven by the limbic system, when tired & the pre frontal cortex fails to input any rational thoughts
- Increased cyber bullying, car accidents, anxiety, suicidal thoughts, drug use at night

A Tsunami of teen Sleep Data US Nat Sleep foundation 30,000 teens across 50 states

- 96% screen use in the hour before bedtime
- Active screen activity(phones, games) worse than passive (TV, DVDs)
- Only 8% turn phone off at night
- 34 texts per night average. No real school night weekend difference (insight lacking)
- 77% report sleep difficulties &/or morning tiredness
- 35% have 2 or more energy drinks per day-surrogate marker of sleep deprivation
- 25% of final school year students use a stimulant drug or so called “smart drug” as a “study aid” in order to stay awake in order to complete homework or study

The 5 ways screens sabotage dreams in “screenagers”

1. THE OPPORTUNITY COST EFFECT-Screen time delays bed time & so reduces the opportunity for sleep
2. THE NEUROCHEMICAL EFFECT-It’s exciting, fun & highly addictive. Dopamine & Adrenalin surges. High cortisol. These are awake-promoting chemicals
3. THE ANTICIPATION EFFECT- resulting in “infomania” & constant checking for new messages. Occurs even when not using devices.
4. THE CONDITIONED AROUSAL EFFECT-Portability means less on desk & more on bed. This blurs the boundary between awake, non bed activities & sleep. Brain gets “mixed messages” resulting in “conditioned arousal”

Conditioned Insomnia-training to be awake in bed

- THE CONDITIONAL AROUSAL EFFECT-Screen use in bed trains the brain that bed is a place of exciting wakeful activity. This is called “conditioned arousal”
- Then, “Conditioned Insomnia” follows, which is the inability to get to sleep, because of this wakeful training

The 5th effect of screens on sleep

- THE BLUE LIGHT EFFECT-Blue screen light lowers melatonin & signals the brain to “wake up”
- Smaller screens are worst as light intensity is highest & screen held closer to face

The spiral of cognitive slowing & futile learning at night

- A tired at night teen brain slows down, it goes into “low power mode” & becomes more easily distracted & less attentive
- So homework & study completion takes longer. This is called COGNITIVE SLOWING.
- So bedtime is delayed, so sleep time is reduced
- So the day’s & that evening’s learning is not consolidated into long term memory & is thus forgotten
- The next day same again & so on.
- Late night learning which compromises sleep time is called “FUTILE LEARNING”, ie it is totally wasted learning

Lessons learned from the gibberish language learning experiment

- Early high school kids are taught a gibberish (nonsense) language for 10 days
- All have the same baseline knowledge of the language ie zero
- GROUP A have 2 hours of teaching in the afternoons & have their normal bedtime
- GROUP B have 2 hours of afternoon teaching plus 2 hours of evening teaching, BUT this means they go to bed 2 hours later than usual
- All get up at their school day wake up time ie no sleep ins
- Then there is a gibberish exam, with prizes
- GROUP A come out on top overall?
- This research demonstrates FUTILE LEARNING & the role of sleep in consolidating learning

Angela measuring 256 bits of brain electricity

NATIONAL SCIENCE

Your brain could be sleeping ... even while you're awake

By [Liam Mannix](#)

January 27, 2019 – 2:52pm



Some days, it's all too hard. You've been out late with friends, or up late watching the tennis. You struggled to sleep through a hot summer night.



In the morning, your eyes ache and you feel like you're sleepwalking through meetings. You find yourself making uncharacteristic mistakes.

How much does BAD sleep impact learning?

- 2 groups
- Normal sleep group
- Stay awake all night group
- Next morning given a series of new facts to remember
- A 40% deficit in the creation of new memories equates to the difference between a student ACEING an exam & FAILING MISERABLY

What goes wrong to cause this 40% learning disability?

- Brain MRI scan
- The hippocampus is a sea horse shaped organ in the centre of the brain
- It is the INFORMATIONAL INBOX for new information
- The hippocampus glowed with activity in the well slept group
- In the sleep deprived group, there was NO SIGNAL. The INBOX had shutdown, so new files “bounced”
- So new learning could not be committed to memory. Metaphorically speaking, information goes IN ONE EAR AND OUT THE OTHER

So how does GOOD SLEEP enhance memory?

- SLEEP SPINDLES are big powerful electrical brainwaves in DEEP sleep
- Sleep spindles facilitate FILE TRANSFER from the short term vulnerable reservoir to a LONG TERM facility
- This protects memories & makes them safe
- This is LONG TERM memory

So here we are, from top 12 to 39th of 41 Countries

- A 16 year decline in maths, science & reading in 15 year olds. Some of this relates to worsening sleepiness
- \$28 billion of “Gonski 2” & extra \$2.2 billion in NSW 2017 budget may not work if kids stay tired !

UN agency ranks Australia 39 out of 41 countries for quality education



Pallavi Singhal



SHARE



TWEET



MORE

Australia has been ranked 39 out of 41 high- and middle-income countries in achieving quality education, in the latest international report to find that the country is falling behind in basic measures of teaching and learning.

Only Romania and Turkey were ranked below Australia in education in the latest United Nations Children's Fund (UNICEF) report card.

Study a
Masters,
Graduate
Certificate

Mood & Sleep, a bi directional relationship

- Don't confuse sleep problems and mood problems.
- Anxious kids have trouble sleeping & sleep deprivation fuels ANXIETY
- Same with DEPRESSION
- Same with just generally feeling UNHAPPY

But this relationship can be unexpectedly confusing

- So most mood disordered teens are tired & most tired teens are moody
- BUT, often, when a teen is diagnosed with a mood/psychological problem, their sleep issues are usually “forgotten”
- So, don’t be fooled. Remember to ask about sleep when a student is unhappy, grumpy or anxious...and maybe chat to parents as well
- 2nd case illustrates this confusion

Resilience in the face of stress

- Assessed US students at a stressful time (college entrance).
- Measured sleep time, & genetic risk of Depression.
- Those with inadequate sleep & genetic depression risk, became clinically depressed at college entry time
- Those with genetic risk of depression & adequate sleep did NOT become depressed

A toxic mix, but good sleep helps u cope

- Sleep deprivation + genetic tendency to depression or anxiety + stress = disaster/crisis of NON COPING
- Stress + genetics are unavoidable. Psychological problems can be fiendishly difficult to treat
- BUT, sleep can be trained/fixed
- THEN, good sleep provides resilience & mood protection in the face of stress, so one COPES

- BINGE WATCHING Netflix
- Scrolling AIMLESSLY on FB, Instagram, snapchat
- Up until 1-2 am
- TOLL on schoolwork, UNPRODUCTIVE
- NEGATIVE about school
- Don't often see family
- Can't get to sleep earlier
- Weekends sleeps 5am-3pm

Monique 6 weeks later

- Much happier
- Easier to wake up. Not late for school
- More alert, and productive at school
- Homework & study quicker & more efficient.
Shares her Dad's office
- Dad no longer angry (has rediscovered his lost daughter)
- Has dinner with the family
- Discovered this thing called brunch
- Decided she wants to be a doctor

So what are the sleep problems ?

The “won’t sleepers” & the “can’t sleepers”

- Voluntary sleep restriction....can get to sleep but don't
- Delayed Sleep Phase Disorder-late body clock ...”can't sleep” at normal bed time. Can sleep if they go to bed late. Get great benefit from late school start times
- Conditioned Insomnia-screens & other non sleep activities “train” the brain to be awake in bed
- Psychological insomnia...sleep onset is delayed by anxiety, low moods & so on

The disconnect between science & society

- Real life drop off from 9-7.5 hours
- Science says sleep need is constant at around 9 hours from 12-18 years of age
- This is a “hard sell” to teens. “What, you mean at 16 I should go to sleep at the same time as my 13 yr old brother-you must be dreaming!!”
- Educationalists fit with the social norm, not the scientific norm, by increasing study & homework thru high school years which then reduces sleep opportunity

Multiple-choice poll



On average, on a school night, how much sleep do you get?

1087

Less than 7 hours



7-8 hours



8-9 hours



9 hours or more



Late body clocks & social jet lag

- Inverted sleepiness-Social jetlag
- Full of beans, wide awake & “wired” late at night. So they CAN’T sleep at a normal bed time. Because they are so awake, they are more likely to use screens, which further delays their already late body clocks via the blue light effect
- Lethargic & cranky first thing in the mornings. Can’t get out of bed. Slow to dress & breakfast. May be late for school. This morning lethargy is called “SLEEP INERTIA”
- So the teen body clock is misaligned with school scheduling. Late school starting times, as legislated in many US states
- So this is how we all feel with bad jet lag, except in late body clock kids it is chronic- so called social jetlag

Treatment-1st step-detection-the 2 “red flag” questions

- Sometimes tired body language is obvious.
- Is there evidence of classroom inattention, disengagement, academic under performance, tired body language, or moodiness. THIS IS THE OPPORTUNITY FOR SCHOOL INVOLVEMENT.
- Big weekend sleep ins. This is “catch up” sleep which is proportionate to weeknight insufficient sleep or the so called “sleep debt”
- Very difficult or “impossible” to get out of bed on school mornings. Leads to family disputes and school lateness. Slowness to get moving is called “sleep inertia”

“Sleep Matters” @ Brisbane Boys Grammar

- Initial sleep health program for athletes, based on NBA data, then integrated to Student Wellbeing Curriculum
- Partnership between school, students, & parents
- Recognition of impact of “over scheduling” on sleep (including extra curricular activities)
- Balancing homework & sleep needs, so sleep is not delayed
- Undertaking a trial of late school start times to fit with teen body clocks
- Teachers identifying tired, poorly engaged or inattentive students & flagging potential sleep issues to parents
- Educators exhibiting good digital role modelling

Barriers to treatment-“Selling Sleep” to teens is tricky

- Sleep is not viewed as something precious needing protection, but more as an inconvenient interruption to their busy days
- Thus sleep is not usually prioritised
- Awake activities are much more fun
- There is “no time” to sleep for busy-bee teens
- Sleep deprivation is “normalised”, so most tired teens don’t think it is a problem
- Sleep is not sexy or cool
- “Selling” healthy sleep to COUNSELLORS, TEACHERS & PARENTS is easier than selling sleep to students

Specific treatment strategies for YOU to employ

- When? The earlier the better. It only gets worse. Do not “wait & see”.
In upper high school it becomes really difficult !
- Teens usually won't manage their own sleep independently. Me educating them about sleep does not, in itself, improve sleep habits.
- SO LET'S START FIXING SLEEP. HERE ARE THE 7 STEPS.

1. Have a family meeting where parents put their cards on the table.
“We think you are sleep deprived. We want to help you fix your sleep.
“Your counsellor/teacher has noticed..... Ask them what they think (this assesses their insight. Some tired teens don't realise they are sleep deprived). Try to figure out something that might motivate them to improve sleep eg better at sport, smarter, happier etc

2. Ask your teen for their suggestions. “What are you willing to change?” If you are getting pushback, “Agree to PICK JUST ONE of the strategies below”.

Family treatment strategies for teen sleep

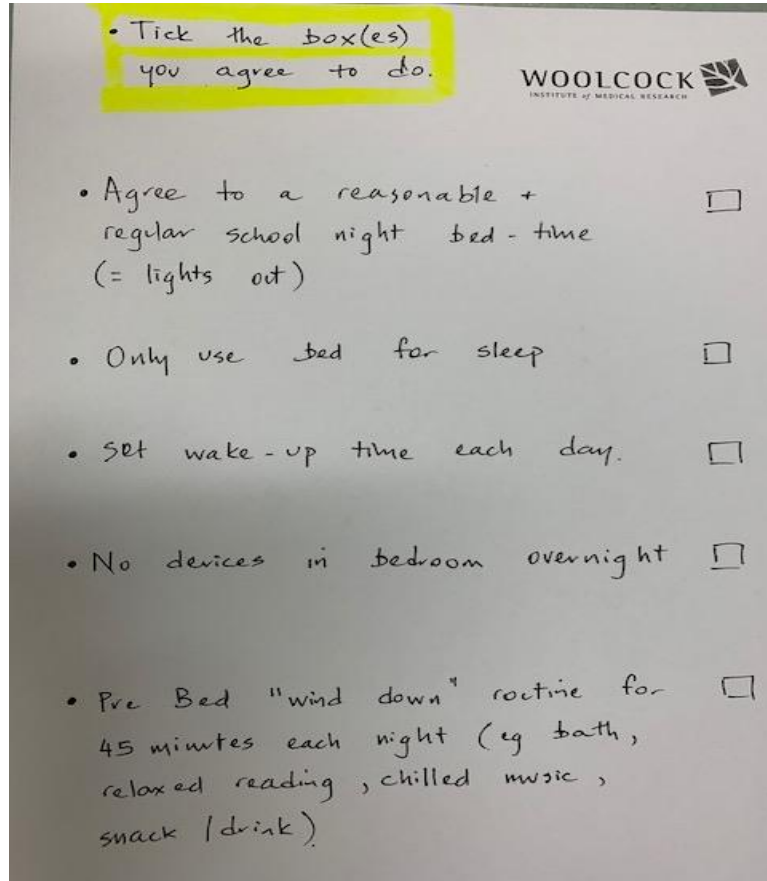
3. Think of evening efficiencies & organisational strategies that help avoid bed time delays. Boys particularly are often hopeless evening organisers, so things happen slowly. Maybe a timetable to avoid bedtime delay, an earlier dinner. This becomes your contribution!
4. Use the bed for sleep only (avoid conditioned arousal).
5. Agree on a reasonable school night bedtime. IDEAL WORLD says 9 hours, REAL WORLD, maybe 8 hours in upper high school . COMPROMISE is often the key
6. Electronic “BEDROOM CLEANOUT” 1 hour b4 bed. This will be a very unpopular suggestion. May need a compromise & progress slowly to overcome FOMO & FOSO. “Brain hacking” is a real issue

Brain re training takes time so be patient

7. PRE BED ROUTINE

- 30-45 minutes
- Relaxing, enjoyable, excludes school work and screens so provides a buffer between business & sleep
- Acts as CBT
- Sets up sleep onset associations, like Pavlov did with his dogs
- Gradually abolishes conditioned arousal
- Hot bath, reading, chilled music-"sleep playlist", snack & drink
- Same time & same sequence each night
- Do all this out of bed. Bed=darkness=sleep
- Does not work overnight. Takes 6 weeks for the teen brain to associate PBR with sleep.

Rowan, the boy who said “no, no, and no” & “I don’t care about my testicles”



- 16 years old
- Lots of nocturnal gaming
- Late for school or not at school
- “Can’t get him out of bed in the mornings”
- No full school days last 2.5 years
- Shoots hoops after school
- Trialled 7 antidepressants over 3 years with NO improvement
- “You’re not depressed, you are ecstatic because you are living the dream”
- “But I might get depressed if I have to go back to school”
- “We need to talk about limiting screen time, either by agreement or force”
- The testicle talk didn’t work !
- “I couldn’t do that to him” ROADBLOCK. Call Amanda

Other digital strategies

- Multi tasking doesn't work
- Don't mix school & social screen activities...20 mins to cognitively reset
- Ideally do homework/study first, then leisure screen stuff second
- Evening computer activity, both school & social, best undertaken in a common area, such as dining/living room, rather than the teen bedroom
- Be a good digital role model
- Have a family “digital sabbath”. One weekend day a month. Helps overcome FOMO & FOSO. Helps engagement in family activities

Night time screen management is often difficult

- As with Rowan, parents may feel DISEMPOWERED ie they know what SHOULD be done but can't do it. So they may get “stuck” at this point in the “best friend” vs “best interest” vs “teen need for independence” conundrum
- If above cannot be achieved, by mutual agreement, the next step is “parent determined electronic control”. They may need your support to take this step
- Family Zone places limits on timing & type of electronic activities. Sometimes just the discussion of acquiring a screen limiting device is enough to change nocturnal screen habits

The 5 reasons that home treatment may fail

- Low motivation to change
- Poor insight
- Parental disempowerment
- Very delayed body clock
- Overwhelming psychological issues

- Then come visit me @ SleepShack

Online diagnosis & treatment via SleepShack-10-18 years

- Replicates face to face consultation for families who don't live in Sydney.
- Diagnoses and individually treats sleep deprivation
- Circadian-body clock treatment
- Behavioural treatment
- Environmental treatment
- Psychological Treatment
- Drug free
- Read more @ SleepShack

Resources

- Online Sleep Treatment (10-18 years)
(sleepshack.com.au)
- In School Sleep Health Seminars & Workshops Australia wide
(thesleepconnection.com.au)
- Adolescent Sleep Clinic, Glebe
(Woolcock.org.au) ph 0423523840
- “Nurturing Young Minds”

Some key “take home” points

- The most chronically sleep deprived group on the planet are teenagers. Yet it is poorly recognised as a health problem
 - Many sleep deprived teens are MISLABELED as depressed, or mood disordered, or lazy, or even normal
 - Worsening learning outcomes & increasing psychological problems in teens are linked to increasing levels of sleep deprivation
 - Teenagers are generally trustworthy, but don't trust teens to manage their own sleep. The temptations not to sleep are too great !!
 - Sleep health should be taught in all schools
- Some students are tired because they CHOOSE not to sleep much. Others CAN'T sleep
 - You can make a BIG difference, but you need to be PROACTIVE.
 - Building resilient sleep protects teens from mental health problems, particularly at times of stress, & optimises learning
 - When you see a unhappy, grumpy, lazy, moody teen who has no engagement whatsoever in learning, you can (almost) bet your bottom dollar they are sleep deprived
 - SLEEP IS TRULY A SUPER POWER