Nature Play

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Brain Development 101

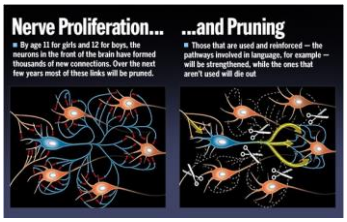
We are all born… far too early.

Synaptic Density – Changes Over Time

Stimulation is vital when the brain is growing rapidly

- Experience-Expectant Growth
  - Ordinary experiences "expected" by brain to grow normally
- Experience-Dependent Growth
  - Additional growth as a result of specific learning experiences
- The importance of critical/sensitive periods.
  - The human brain wires itself to the environment in which it finds itself.
- https://www.dailymotion.com/video/xl7eh1

- If an adolescent is doing music, sports or academics, those are the connections that will be hard wired. If they're lying on the couch or playing video games or watching MTV, those are the cells and connections that are going to survive.
  - J. Giedd (Chief of Brain Imaging – Child Psychiatry Branch, National Institute of Mental Health)



Ulrich – Room with a View

- The curious case of ADHD:
  - Is it reasonable to expect a 5 year old to sit in a chair for 5 hours per day and concentrate on learning "ABC"?
  - Boys who live closer to a park show lower rates.
  - *Is play in green spaces causing actual brain changes?*

Nature and ADHD

- Children with ADHD completed a series of challenging puzzles to ↑ attentional fatigue
- Then set out on a guided walk for 20 minutes
  - a. Vegetation-rich urban park
  - b. Downtown built area
  - c. Area clustered with houses.
- Post-walk the child was driven back to a quiet indoor setting for neuro-cognitive testing – attention and executive functioning
- Park-walk improvements in cognitive function equivalent to published data w/methylphenidate
  - Taylor A, Kuo F. Children with attention deficits concentrate better after walk in the park. J Atten Disord 2009;12:402-9

Childhood experience with nature

- Fewer depressive symptoms in adulthood
- Children more likely to develop emotional affinity to and support for protecting biodiversity (Nature stewardship)
- In pre-school children, non-accessibility of green space is associated with risk of emotional problems
- In children aged 11-14, green space exposure (measured via GPS receivers) linked to emotional wellbeing more than moderate-to-vigorous physical activity (accelerometer)

- Snell, et al. 2016;26:111-124 ; Soga, et al. 2016 May 25;13(6). Zach, et al. 2016 Jul;219(4- 5):458-67; Ward, et al. 2016 May 11;40:44-50

Hot off the press! PNAS 2019

- **Residential green space in childhood is associated with lower risk of psychiatric disorders from adolescence into adulthood**
  - Kristine Engemann, Carsten Bøcker Pedersen, Lars Arge, Constantinos Tsirogiannis, Preben Bo Mortensen, and Jens-Christian Svenning
- Green space can provide mental health benefits and possibly lower risk of psychiatric disorders. This nation-wide study covering >900,000 people shows that children who grew up with the lowest levels of green space had up to 55% higher risk of developing a psychiatric disorder independent from effects of other known risk factors. Stronger association between cumulated green space and risk during childhood constitutes evidence that prolonged presence of green space is important. Our findings affirm that integrating natural environments into urban planning is a promising approach to improve mental health and reduce the rising global burden of psychiatric disorders.

Nature Play and Biophilia

True adaptation; problem-solving in groups; resilience-building failures (or stress inoculation)

Access to "green space" consistently shows links to: better physical health, lower rates of ADHD; better self-regulation; better stress management.

What about the fun police?

- Sydney Playground Project let kids loose in a OH&S nightmare of 44 gallon drums, ropes, tyres, milk crates etc in unstructured play:

- Reduction in fighting and bullying
- Creative children became the new alphas
- Exercise and PA increased

What about the Parents?

- Auckland and Otago University research: primary schools across NZ banned playground "rules"
  - Fewer incidents of bullying needing teacher intervention
  - Kids learned to take risks and evaluate consequences
  - Drop in vandalism and serious injuries
  - Improved self-control, taking responsibility
  - Ottowa study (31, 000 children) found no head/neck injuries from playground play over 2 year period. Broken limbs etc 1.5 injuries per 10, 000 hours of play

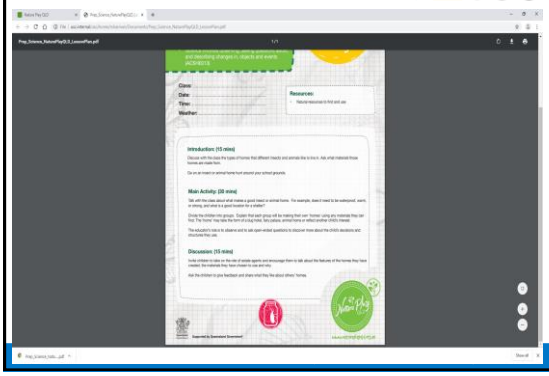
What about the Lawyers?

- Remove them from any system that responds to playground/sporting injury – seriously.
- http://www.acc.co.nz/

What about the Research?

- 8th June 2015
- International Journal of Environmental Research and Public Health Position Statement:
- "in response to practitioner, academic, legal, insurance and public debate, dialogue and disagreement on the relative benefits and harms of active (including risky) outdoor play"
- Their conclusion?
- "Access to active play in nature and outdoors, with its risks, is essential for healthy child development. We recommend **increasing** children's opportunities for **self-directed** play outdoors in all settings, at home, at school, in child care, the community and **nature**."

What Can I do as a Teacher?



What Can I do as a Parent?

- Get out! And about with your child…
- Avoid plastic-fantastic/indoor playgrounds – head to the beach, open spaces and explore
- Encourage your child to help in the garden – have them water some basic veges/plants with their own watering can
- Get to know the children in your neighbourhood – encourage outdoor play in groups
- Put limits on screen time; and delay smartphone purchases
- Remember you are your child's parent, not their friend: be a mentor not an enabler!
- Always remember: **Dirt won't hurt!**

Further reading

- https://theconversation.com/bulldozer-parents-creating-psychologically-fragile-children-32730
- https://www.abc.net.au/news/2016-04-07/sharman-free-range-kids-could-become-healthier,-happier-adults/7306740
- https://tapestry.info/au/putting-nature-back-into-play/