

Developing the 'mental wealth' of Australian youth: Implications from neuro and social sciences!

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THE UNIVERSITY OF
SYDNEY



Disclosures

- 5% Equity Holding in Innowell – A joint venture between University of Sydney and PwC to develop IT-based management systems for assessment and management of mental disorders
- Commissioner of the Australian National Mental Health Commission

What are the real issues we face?

- 1. Growing the mental ‘wealth’ of young people
 - Critical personal, social and national issues
 - RECOGNISING INDIVIDUAL DIFFERENCES IN DEVELOPMENT!!
- 2. RECOGNISING THE IMPLICATIONS OF NEW SCIENCES
 - NO SIMPLE AVERAGES.....
- 3. Focusing on broad institutional responses
 - Serious, systemic and sustained
- 4. Engagement with young people as partners
 - Moving from paternalism to partnerships in student experiences
- 5. Recognising the place of key transitions
 - PUBERTY, MID-ADOLESCENCE, SCHOOL LEAVING
- 6. Genuine Commitments to effective care
 - accessible and high quality early intervention

FEATURE

The mental wealth of nations

Countries must learn how to capitalize on their citizens' cognitive resources if they are to prosper, both economically and socially. Early interventions will be key.

John Beddington, Cary C. Cooper, John Field, Usha Goswami, Felicia A. Huppert, Rachel Jenkins, Hannah S. Jones, Tom B. L. Kirkwood, Barbara J. Sahakian and Sandy M. Thomas

Thomasson and colleagues for a controlled experiment

to investigate the challenges and opportunities that lie ahead in the next 20 years. The report provides an independent assessment that is intended to inform policy-makers both in the United Kingdom and around the world.

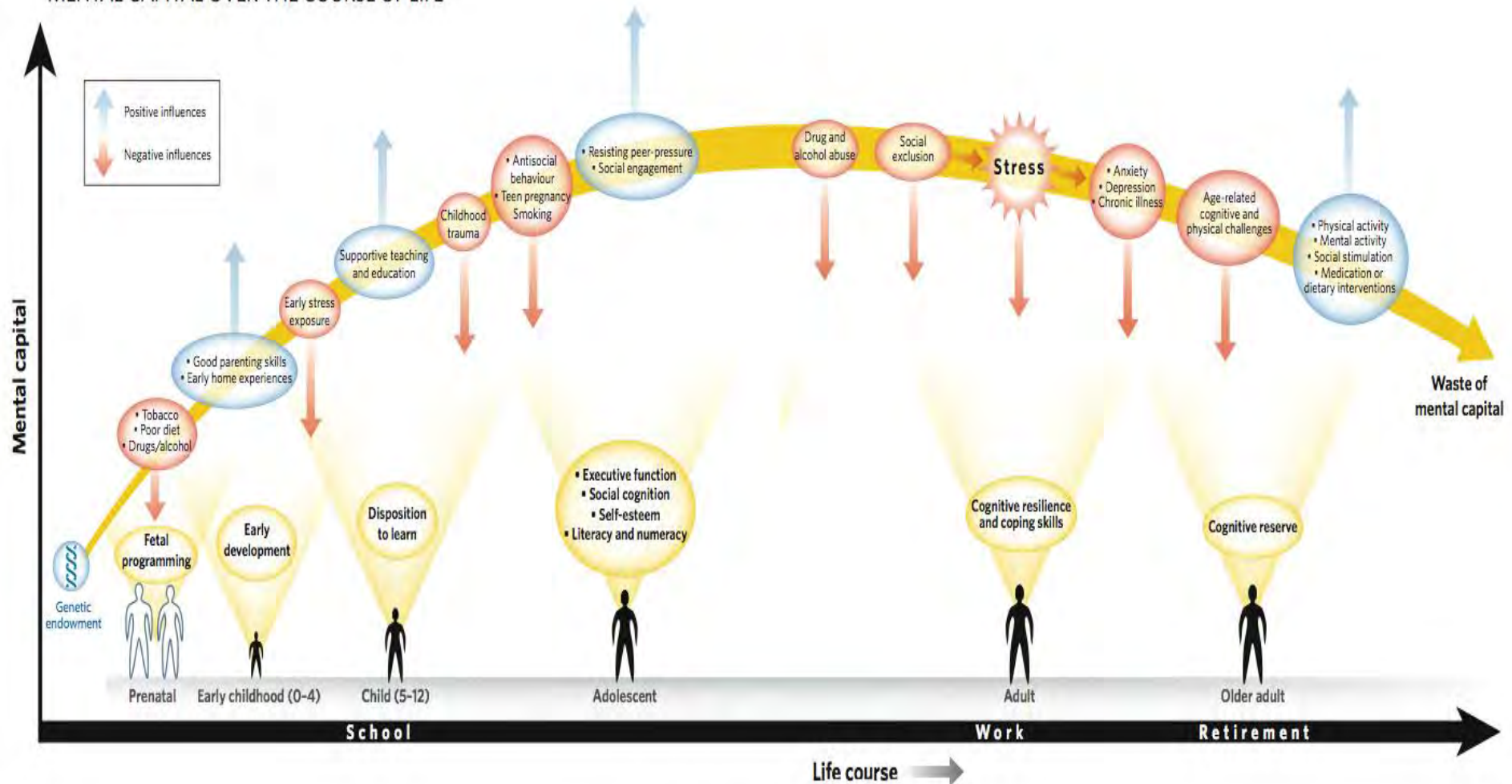
The report also considers the implications of future

childhood and adolescence. Early learning in children can increase their resilience to stress and common mental disorders. Later in life, this resilience helps to engender well-being at work and into old age. And older individu-

als with a more robust brain health, as well as www.bmrc.org.au

Building mental Capital across the Life Cycle

MENTAL CAPITAL OVER THE COURSE OF LIFE



Whole Brain



Cracking the Brains Code: ABA

Neuron

NeuroView

Australian Brain Alliance

Australian Brain Alliance Steering Committee*

*Correspondence: richards@uq.edu.au

<http://dx.doi.org/10.1016/j.neuron.2016.10.038>

Cracking the Brain's Code

The overarching goal of the ABI is to “crack the brain’s code.” This is defined as understanding the mechanisms or “codes” that underlie how neural circuitry develops, how it encodes and retrieves information, how it underpins complex behaviors, and how it adapts to external and internal changes

Essential Questions??

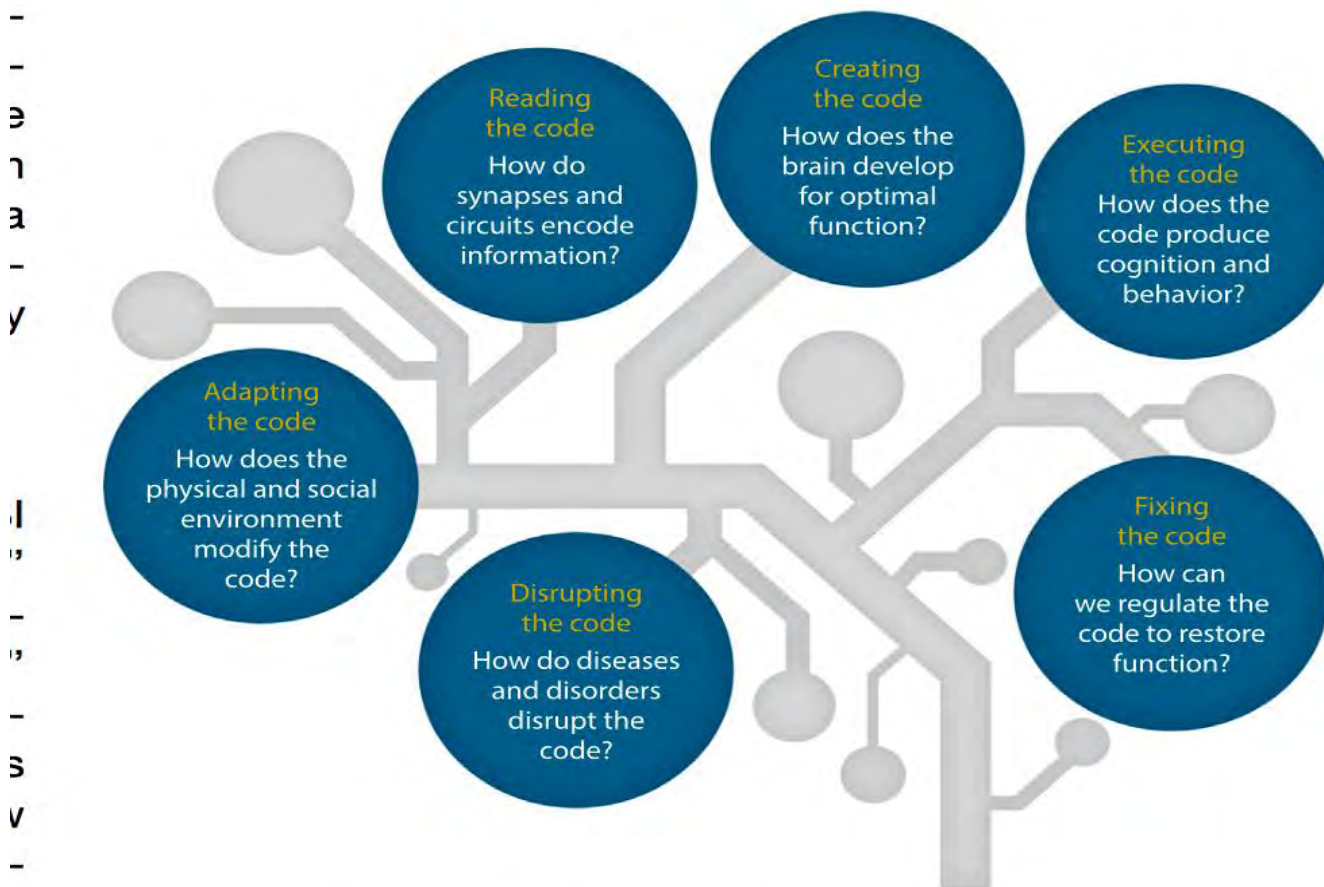
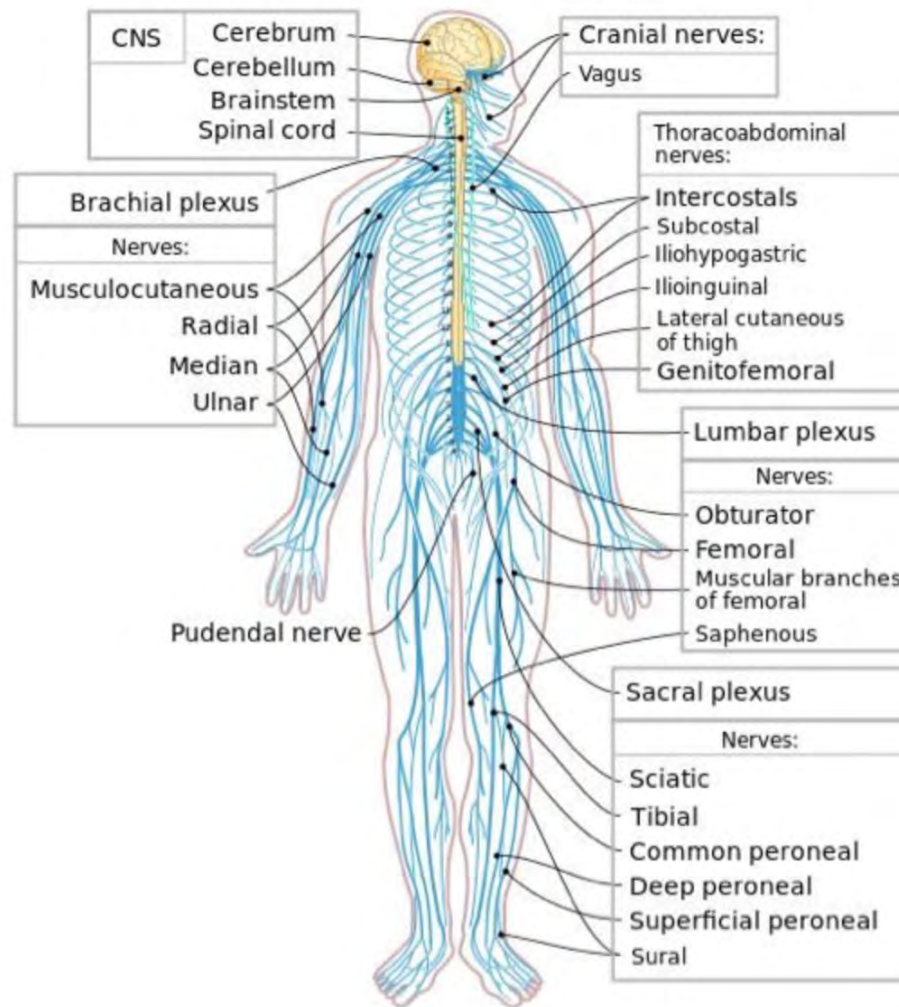
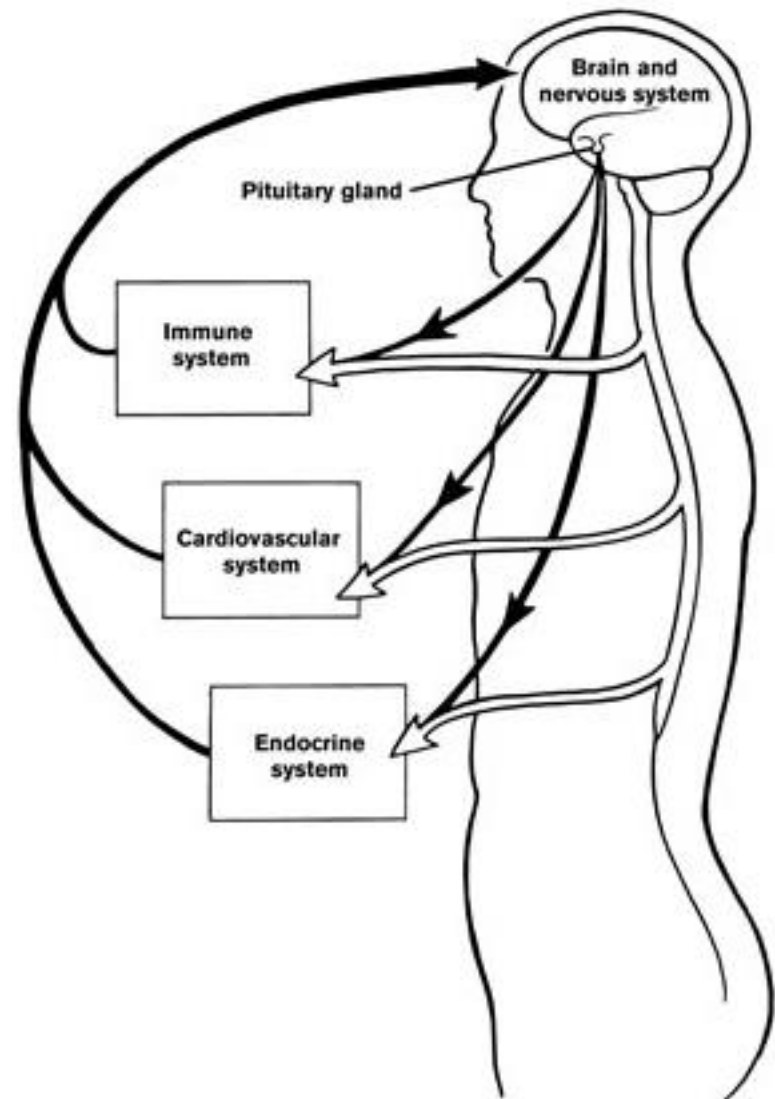
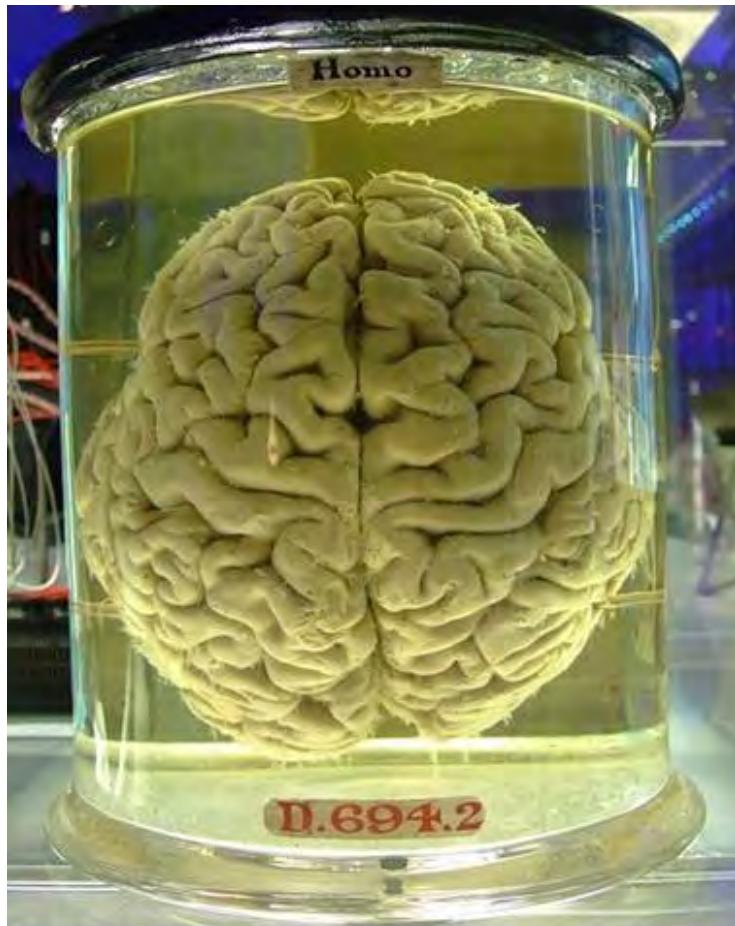


Figure 1. Cracking the Brain's Code

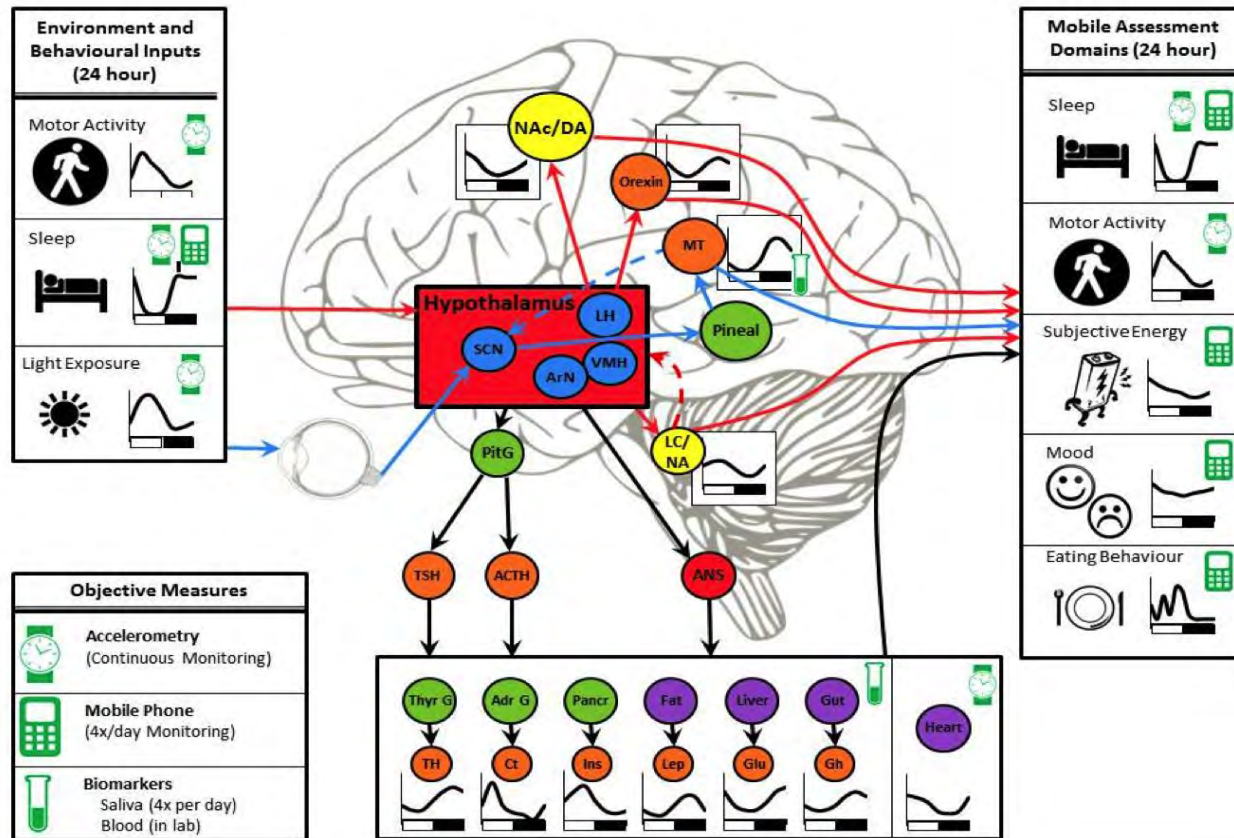
Human Nervous System – Monitoring the environment



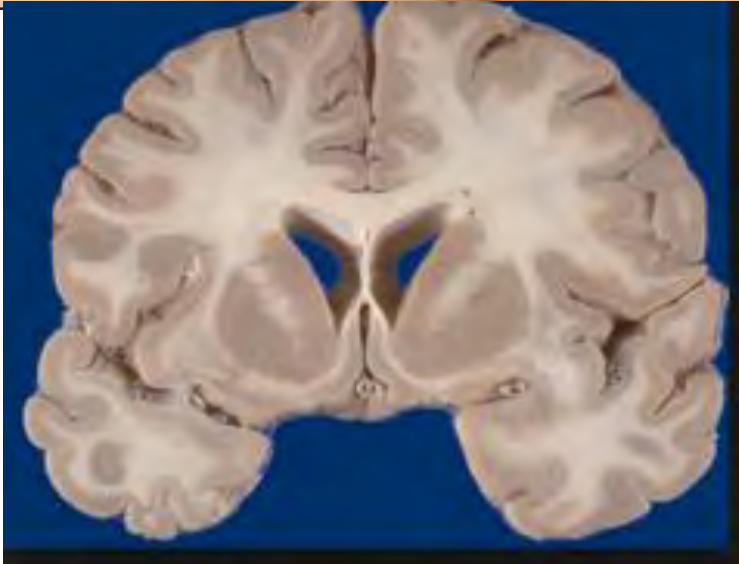
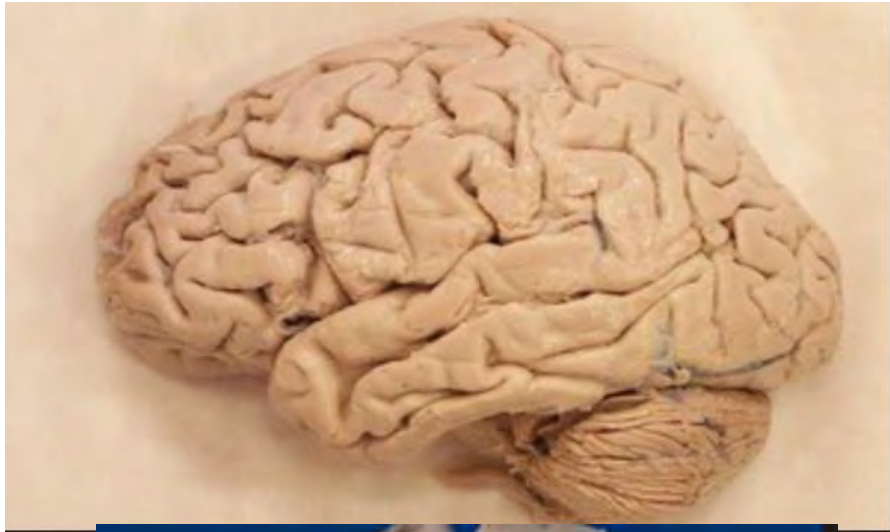
Brain and Body interactions



Environmental processes associated with regulation of Circadian system

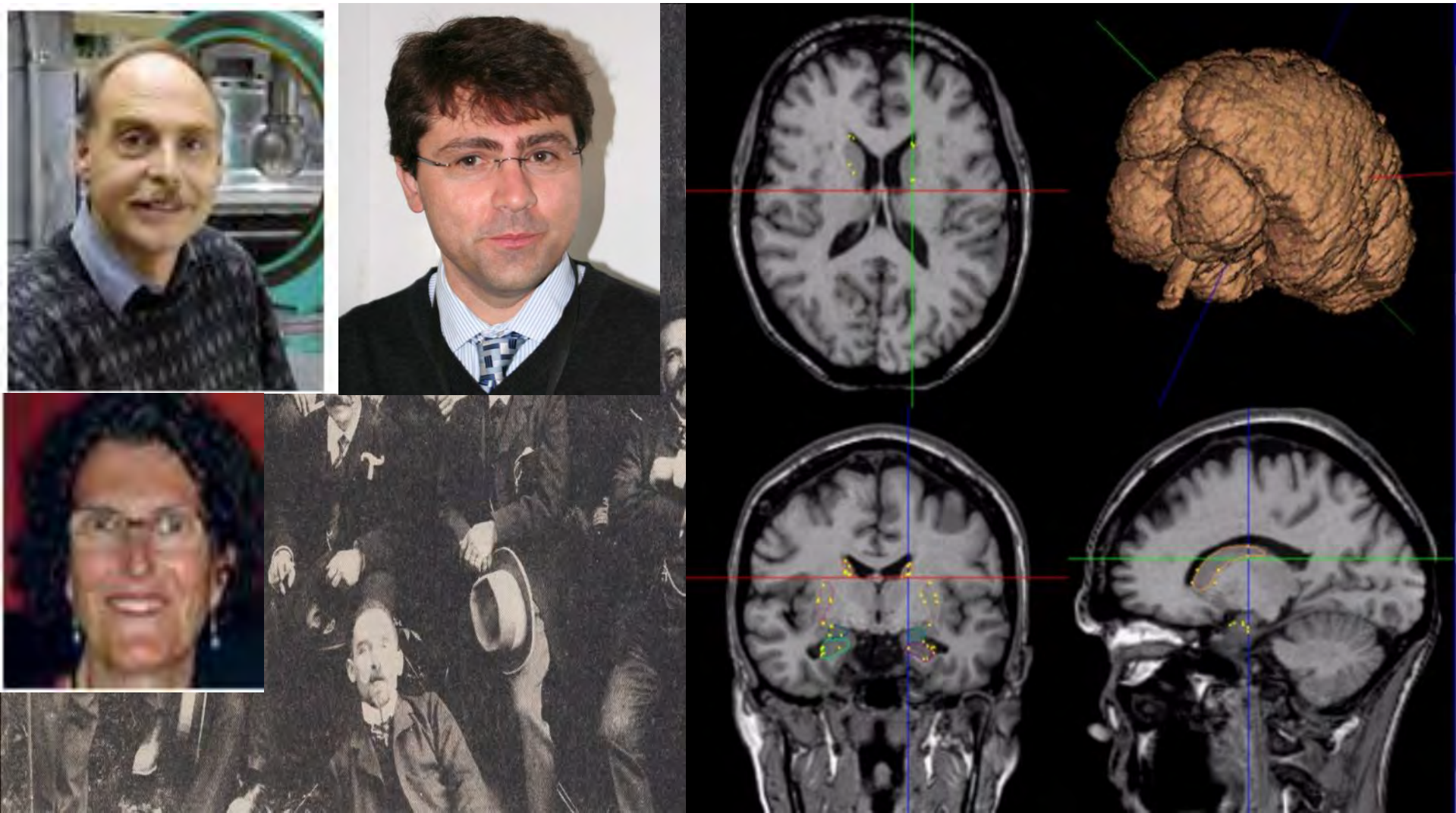


Changing Brain Sciences by changing the view

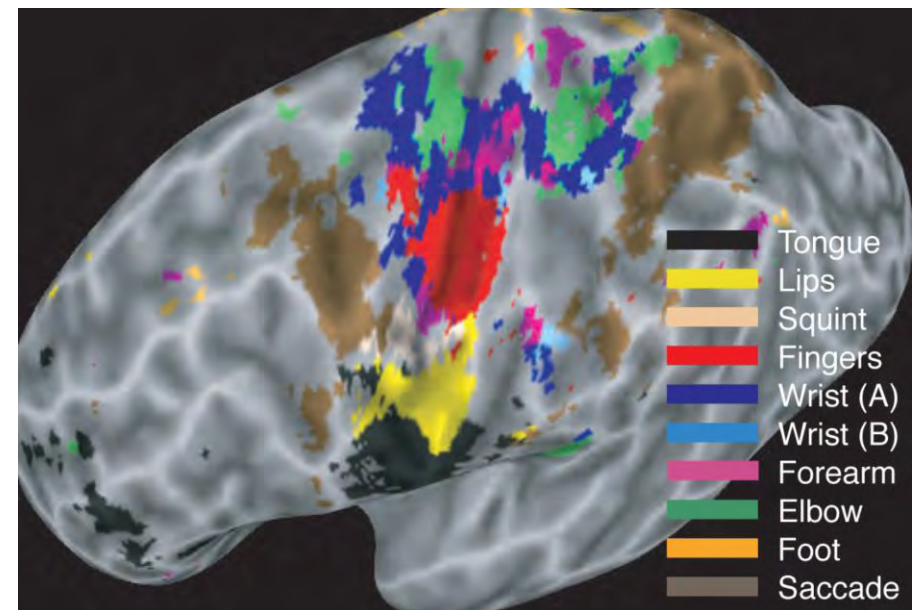
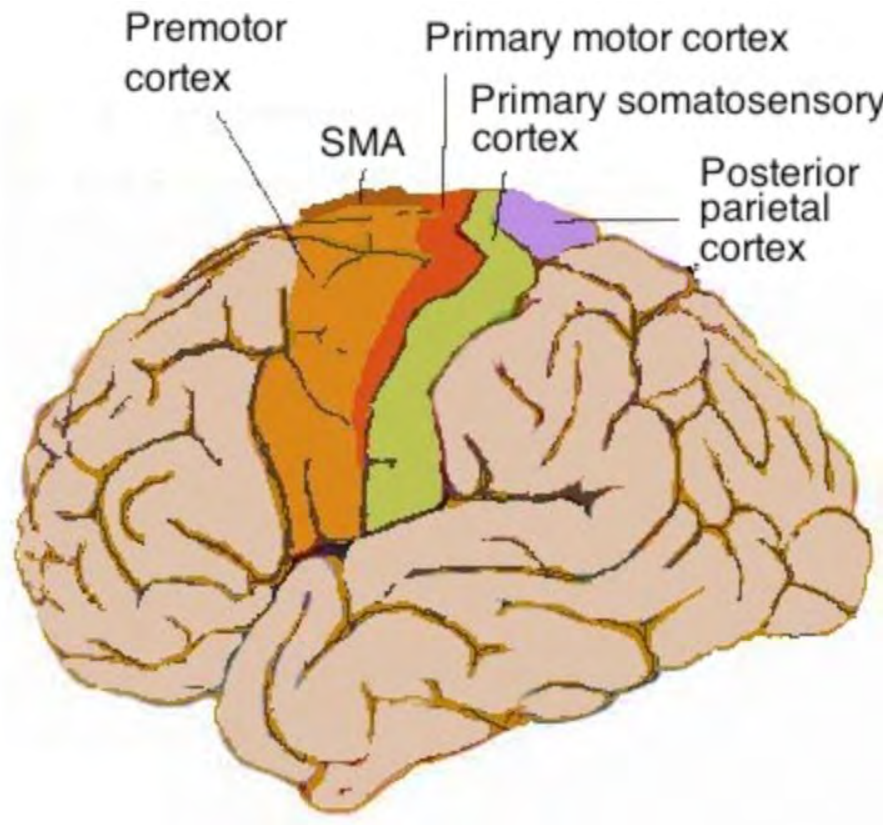


Structural brain change: 100 years apart

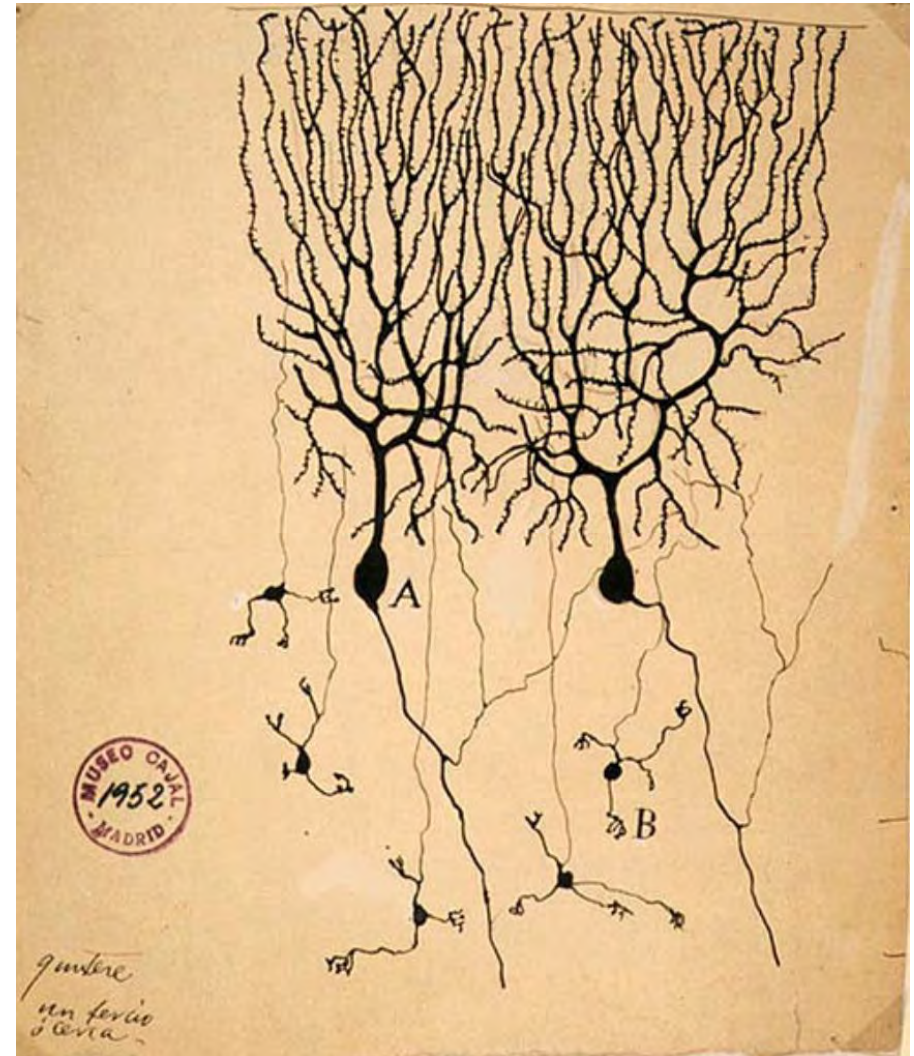
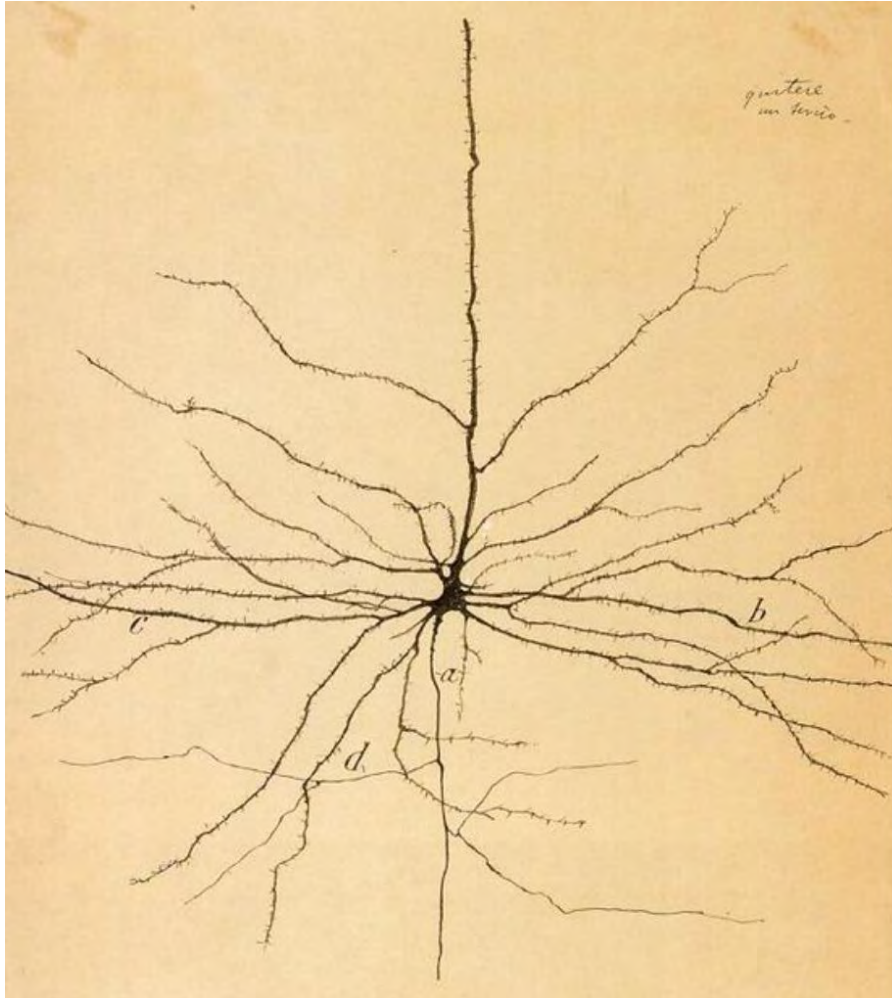
Establishing high-quality neuroimaging platforms



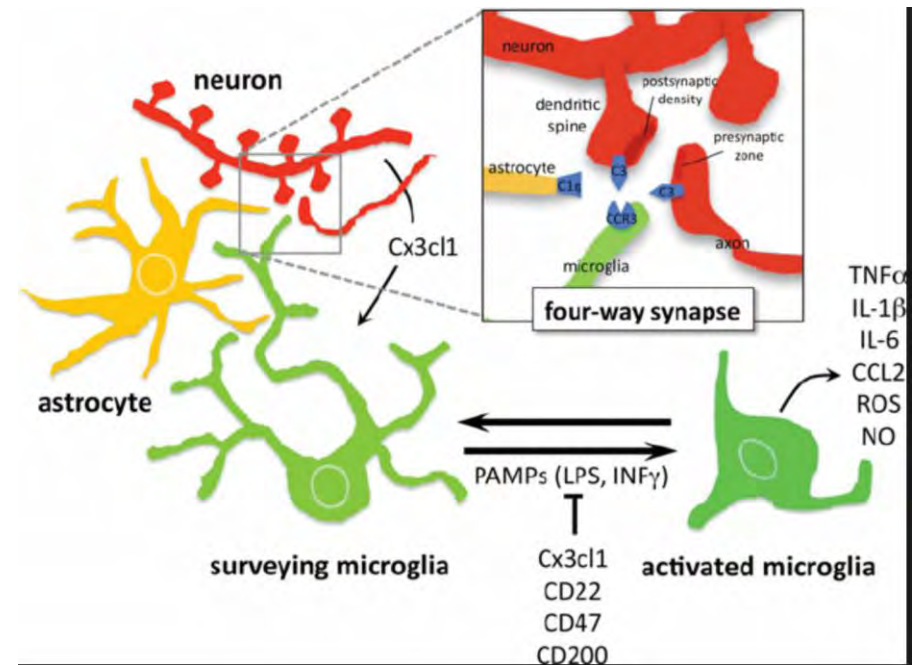
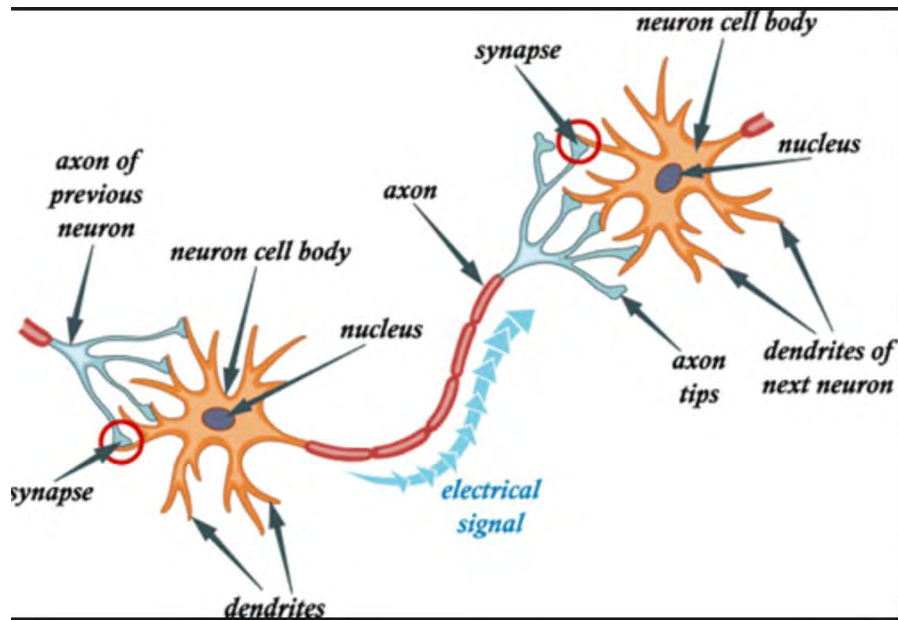
Human Motor Cortex



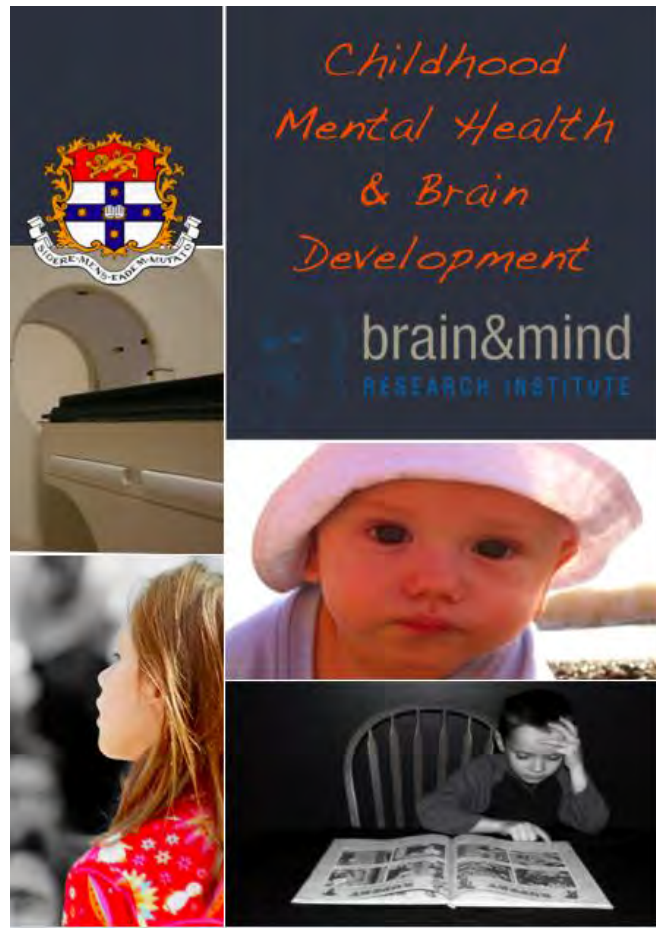
Cajal's key drawings – early 1900's



Cellular Transmission – increasing Complexity



Brain Development in Childhood and Adolescence



Vulnerable periods of childhood brain development

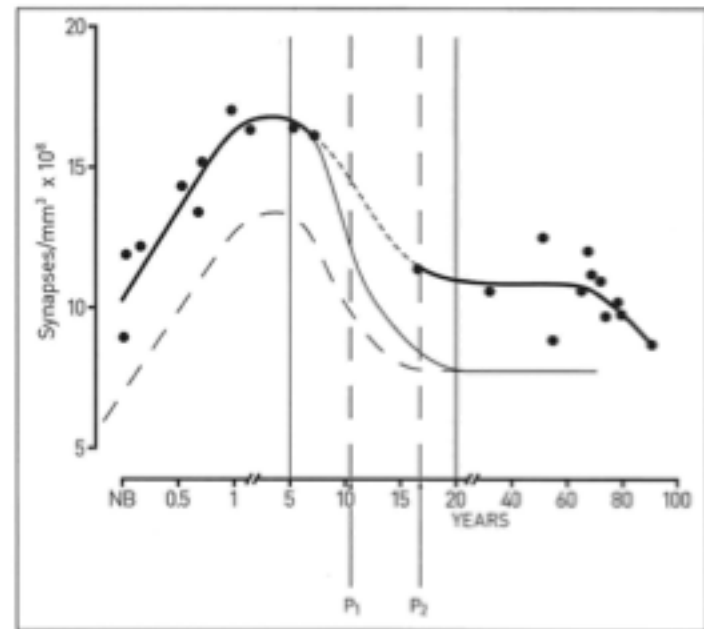
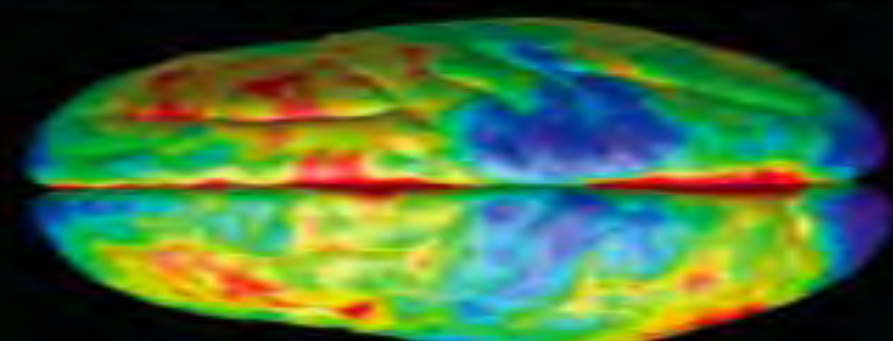
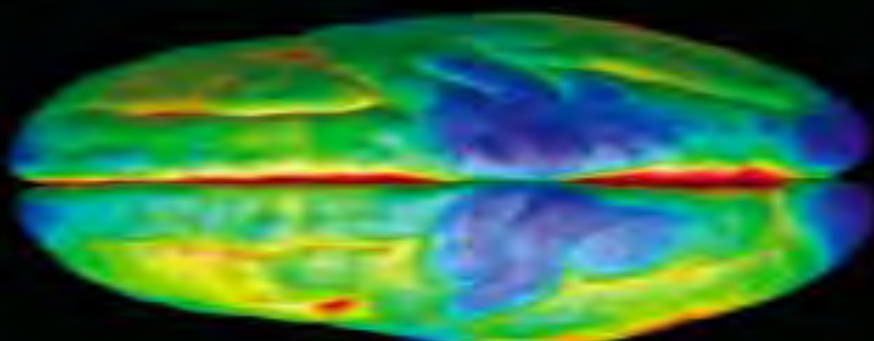


Figure 2: Synapses form most rapidly in the brain during childhood (0-10 years), as this graph shows. During adolescence there is a decline in synapses. The adolescent period is one during which psychoses occur such as schizophrenia. The childhood period is one of vulnerability to diseases such as Autism and Fragile X Retardation. The thick line fits the observed data points. The thin line indicates excessive loss of synapses that may lead to psychosis. The dashed line indicates failure of synapse formation in the newborn leading, for example, to Autism (see Bennett (2008) Dual constraints on synapse formation and regression in schizophrenia. *Australian & New Zealand Journal of Psychiatry* in press).

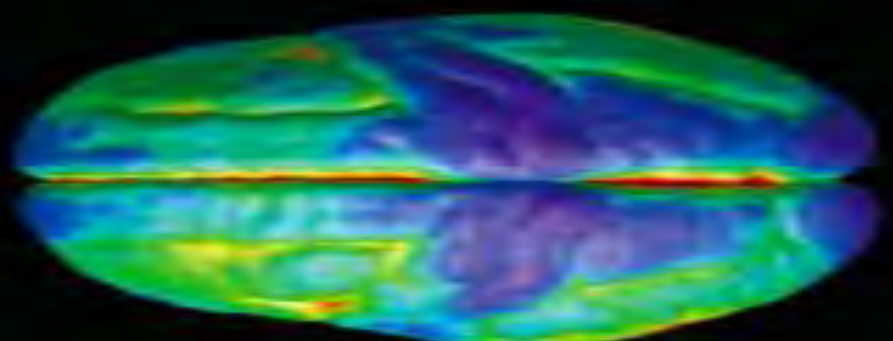
Normal Brain Development



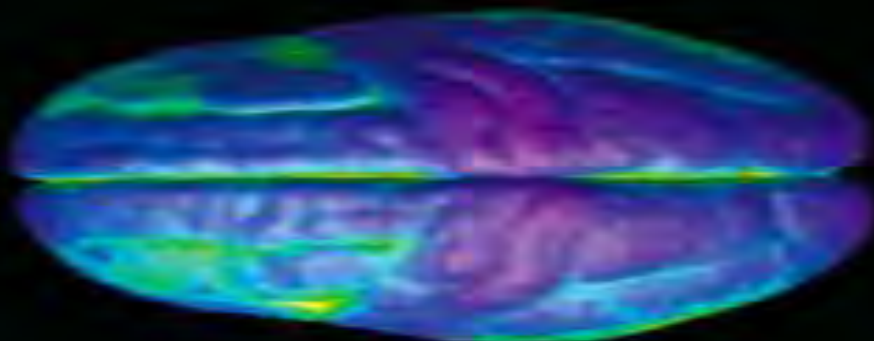
Age 5



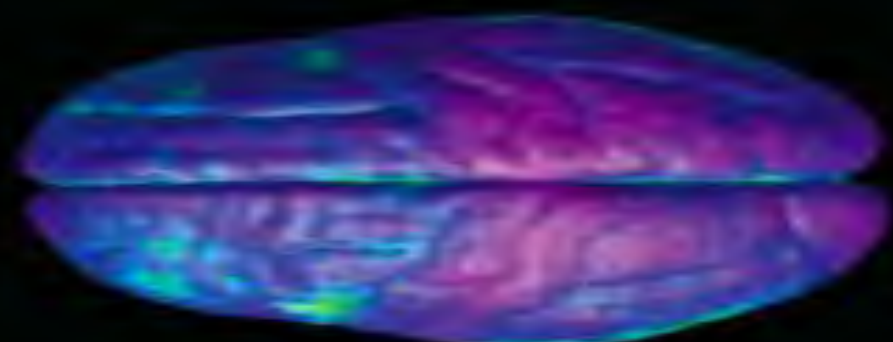
Age 8



Age 12



Age 16



Age 20



Maturing brain. An NIMH study of 13 individuals over a decade reveals a process—still under way in the late teens—in which gray matter is replaced throughout the cortex, starting at the rear.

Brain Development in Teenagers: Cortical-Subcortical Processes

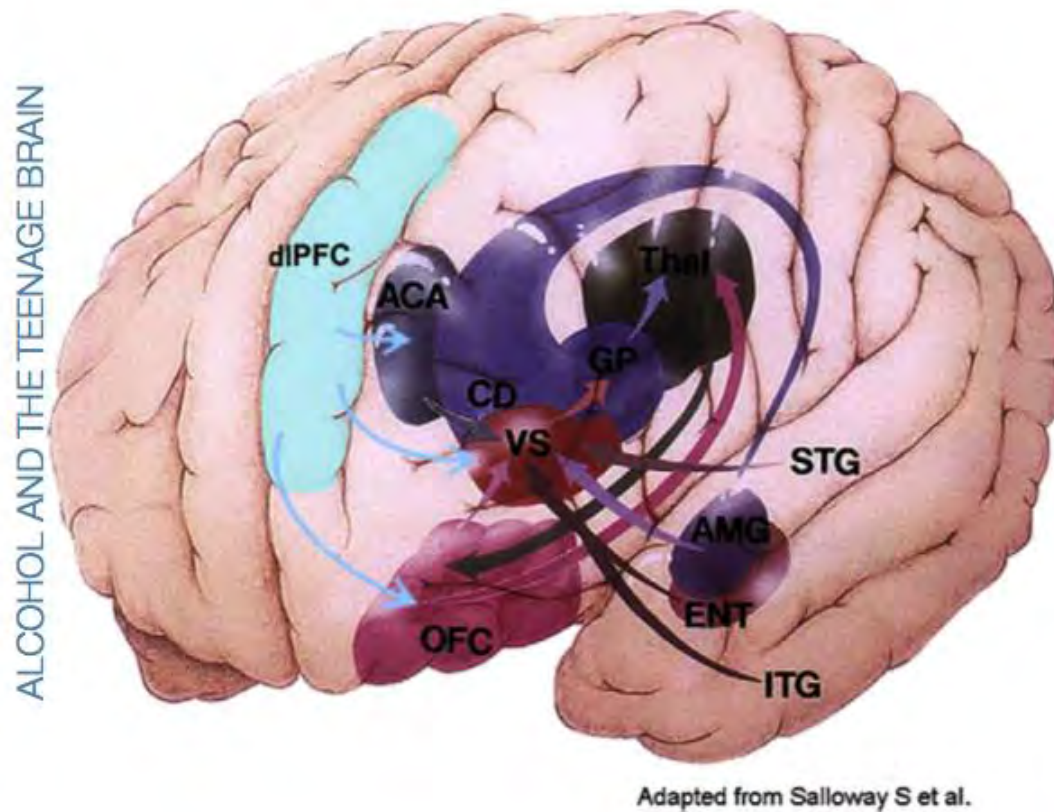
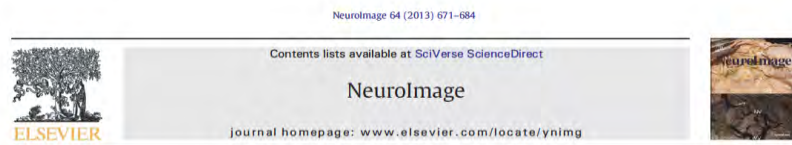


Figure: Crews F, Boettiger C (2009) Impulsivity, frontal lobes and risk for addiction.

Developing brain connections



Development of brain structural connectivity between ages 12 and 30: A 4-Tesla diffusion imaging study in 439 adolescents and adults

Emily L. Dennis^a, Neda Jahanshad^a, Katie L. McMahon^b, Greig I. de Zubicaray^c, Nicholas G. Martin^d, Ian B. Hickie^e, Arthur W. Toga^a, Margaret J. Wright^{c,d}, Paul M. Thompson^{a,*}

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ABSTRACT

Understanding how the brain matures in healthy individuals is critical for evaluating deviations from normal development in psychiatric and neurodevelopmental disorders. The brain's anatomical networks are profoundly re-modeled between childhood and adulthood, and diffusion tractography offers unprecedented power to reconstruct these networks and neural pathways *in vivo*. Here we tracked changes in structural connectivity and network efficiency in 439 right-handed individuals aged 12 to 30 (211 female/126 male adults, mean age = 23.6, SD = 2.19; 31 female/24 male 12 year olds, mean age = 12.3, SD = 0.18; and 25 female/22 male 16 year olds, mean age = 16.2, SD = 0.37). All participants were scanned with high angular resolution diffusion imaging (HARDI) at 4 T. After we performed whole brain tractography, 70 cortical gyral-based regions of interest were extracted from each participant's co-registered anatomical scans. The proportion of fiber connections between all pairs of cortical regions, or nodes, was found to create symmetric fiber density matrices, reflecting the structural brain network. From those 70 × 70 matrices we computed graph theory metrics characterizing structural connectivity. Several key global and nodal metrics changed across development, showing increased network integration, with some connections pruned and others strengthened. The increases and decreases in fiber density, however, were not distributed proportionally across the brain. The frontal cortex had a disproportionate number of decreases in fiber density while the temporal cortex had a disproportionate number of increases in fiber density. This large-scale analysis of the developing structural connectome offers a foundation to develop statistical criteria for aberrant brain connectivity as the human brain matures.

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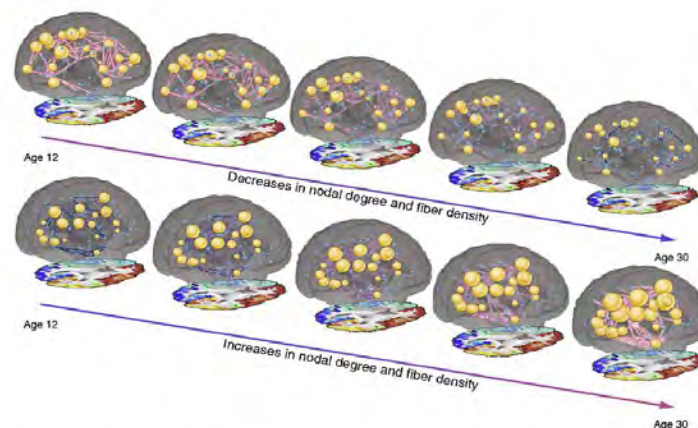
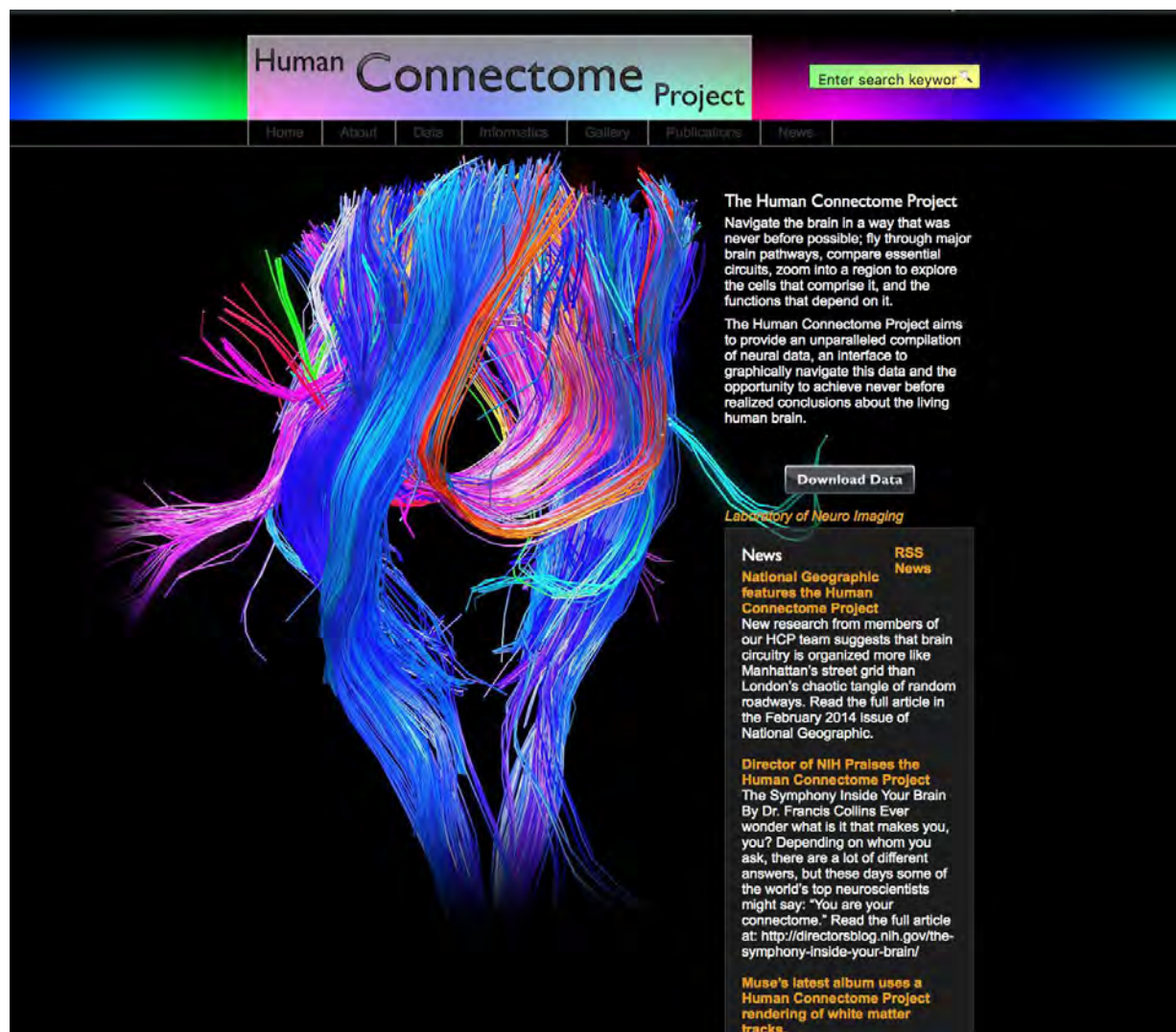


Fig. 3. Still images from Supplementary Video 1 and Supplementary Video 2 displaying the increases and decreases in degree and fiber density between age 12 and age 30. While we lack scan data for some parts of this age range, we used the regression coefficients from our analysis to estimate network metrics at each year. For this image, node size is proportional to the degree (number of connections), and connection thickness is proportional to relative fiber density. The connection color is simulated to make the connections easier to see. The rate of increase or decrease for each node and connection was the regression coefficients from our age analyses for those nodes and connections. Small blue dots indicate nodes for which there was no significant age-related increase or decrease in degree. Only connections that had a significant age-related increase or decrease in fiber density are included in this image, other connections exist but are not drawn in for clarity. In this image are both weighted (fiber density) and binary (degree) measures. These images are created from the results when analyses were restricted to only connections existing in at least 95% of subjects.

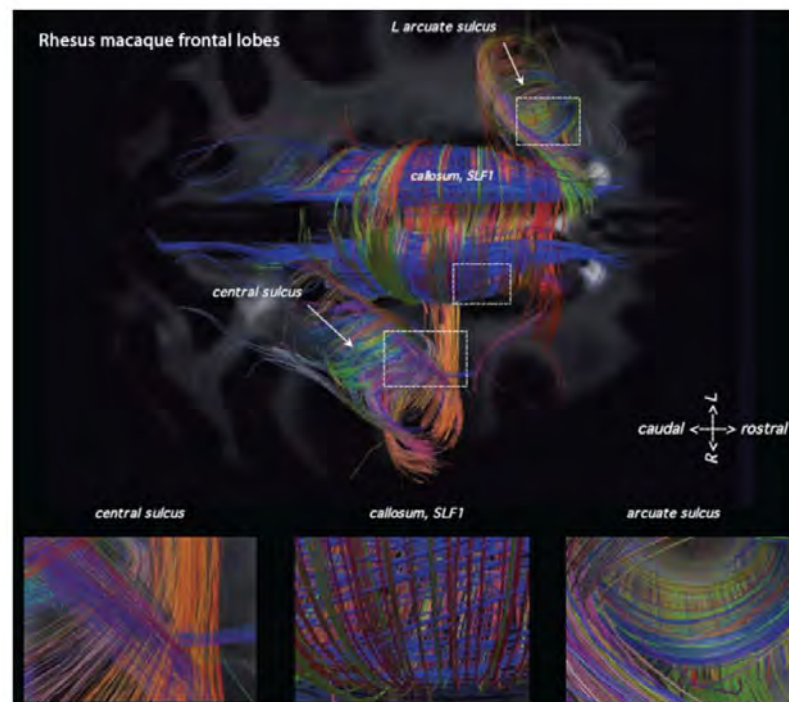
Brain Connections in the 21st C (??new insights)



More information = More insight??

The brain is full of Manhattan-like grids

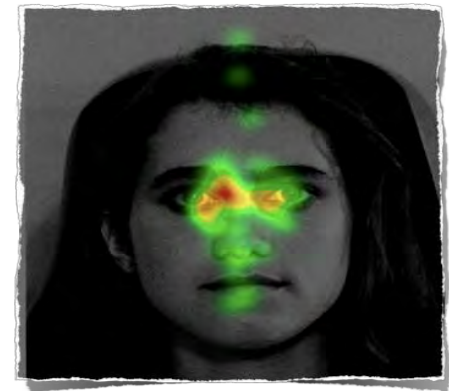
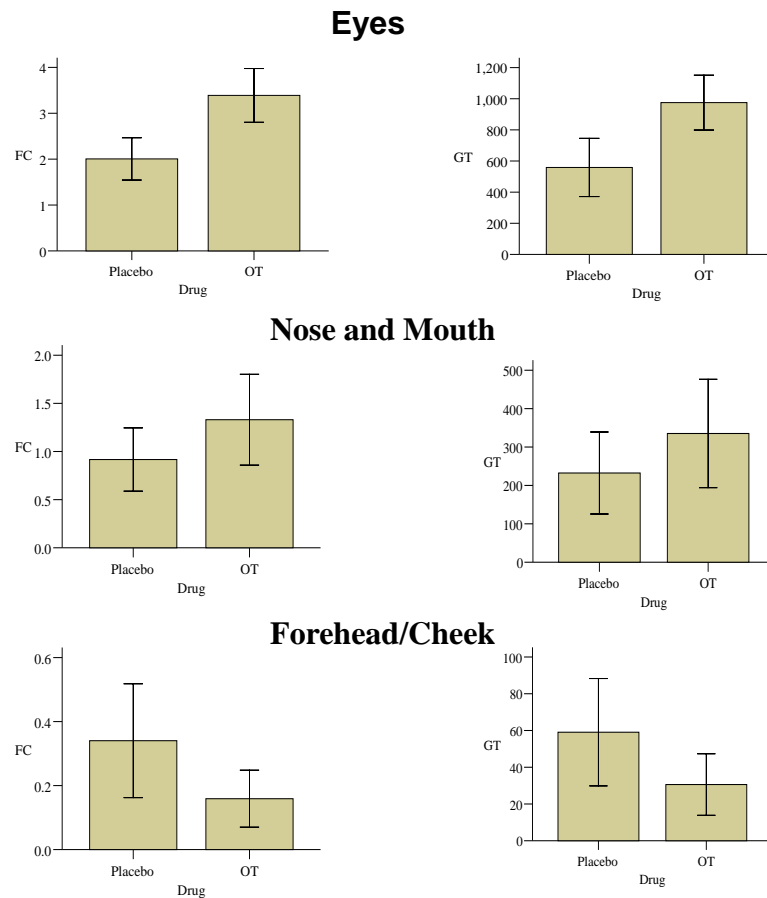
© POSTED THU, 03/29/2012



London's streets are a mess. Roads bend sharply, end abruptly, and meet each other at unlikely angles. Intuitively, you might think that the cells of our brain are arranged in a similarly haphazard pattern, forming connections in random places

DEVELOPING SOCIAL COGNITION

48 Males assigned to OT or placebo nasal spray
Post-Drug: Presented with 24 neutral human faces



Oxytocin



Placebo

Big EU Perspective



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UNDERSTANDING THE HUMAN BRAIN

A NEW ERA
OF **BIG**
NEUROSCIENCE

EXHIBITION: 29 -30 NOVEMBER 2016
EUROPEAN PARLIAMENT BRUSSELS

Understanding the Brain Through Large, Multidisciplinary Research Initiatives

posted on 15 Feb 2017

The multidisciplinary and multicenter approach needed to tackle the issues around understanding the brain are highlighted in an article in the latest issue of *Lancet Neurology*. Written by...

[View »](#)

HBP Begins Work on Gender Equality

posted on 26 Jan 2017

The HBP aims to play a pioneering role in advancing gender equality by targeting a balanced share of male and female scientists in research teams and decision-making, as well as promoting...

First HBP Stakeholder Webinar Series

posted on 19 Jan 2017

We would like to invite you to join in the first HBP Stakeholder Forum Webinar. HBP Stakeholder Forums allow HBP researchers and external stakeholders to discuss matters around controversial...

US Brain Initiative = Technology and Circuits

NIH National Institutes of Health
Turning Discovery Into Health

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The BRAIN Initiative®

BRAIN Update

BRAIN Initiative Investigators Meeting: Discussion on Neuroethical Implications of Advances in Neurotechnology

In December, the NIH BRAIN Initiative held its third annual BRAIN Initiative Investigators Meeting, gathering experts from

Cell Type **Circuit Diagrams** **Monitor Neural Activity** **Interventional Tools** **Theory and Data Analysis Tools** **Human Neuroscience** **Integrated Approaches**

WHAT IS THE BRAIN INITIATIVE?

The Brain Research through Advancing Innovative Neurotechnologies® (BRAIN) Initiative is aimed at revolutionizing our understanding of the human brain. By accelerating the development and application of innovative technologies, researchers will be able to produce a revolutionary new dynamic picture of the brain that, for the first time, shows how individual cells and complex neural circuits interact in both time and space. Long desired by researchers seeking new ways to treat, cure, and even prevent brain disorders, this picture will fill major gaps in our current knowledge and provide unprecedented opportunities for exploring exactly how the brain enables the human body to record, process, utilize, store, and retrieve vast quantities of information, all at the speed of thought.

Highlights of The BRAIN Initiative®

News: | **2016 Funded Awards** | **BRAIN Initiative Funding Opportunities**

2017 Cleared Initiatives

BRAIN Alliance

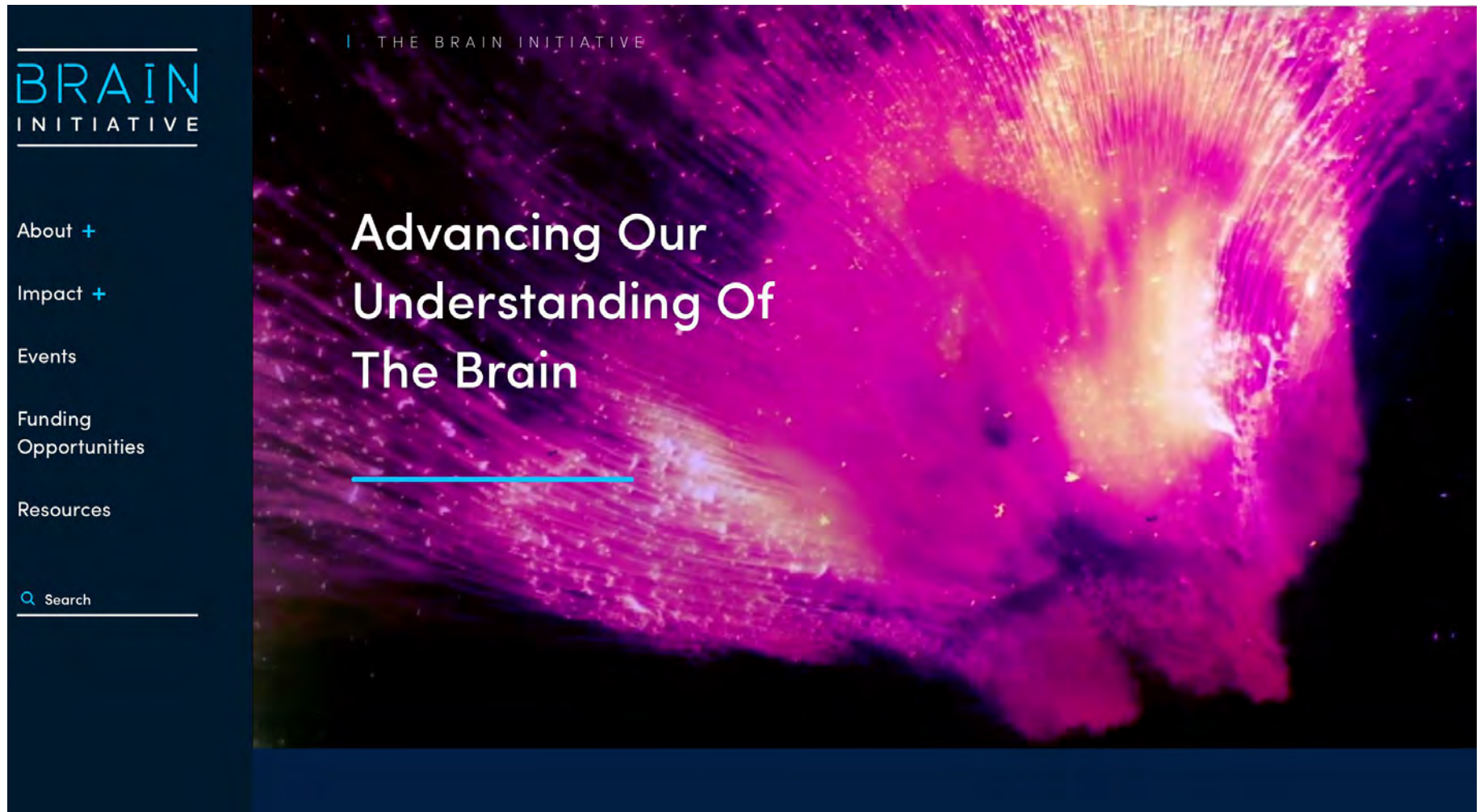
BRAIN Initiative Partners

Federal

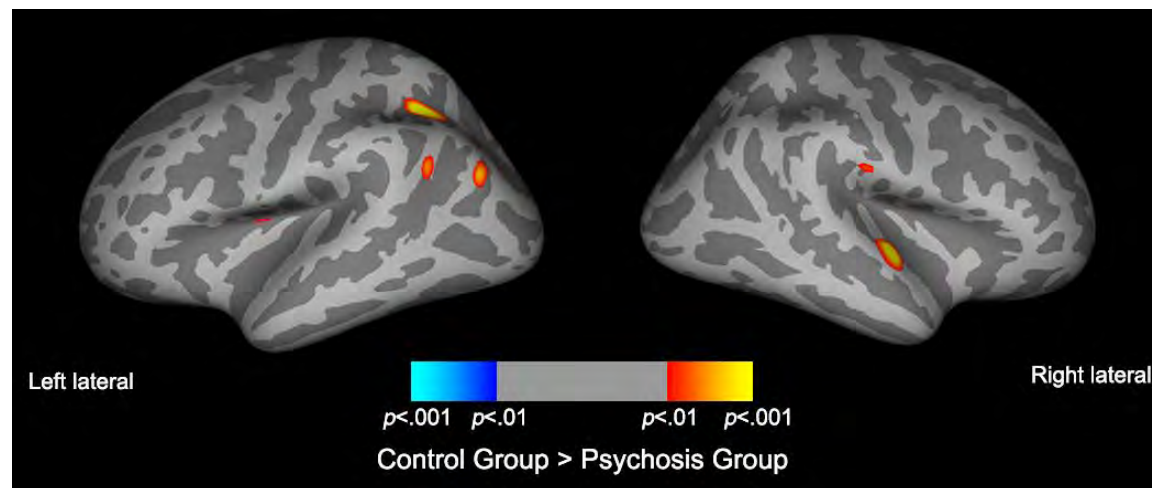
National Science Foundation (NSF)

Defense Advanced Research Projects Agency (DARPA)

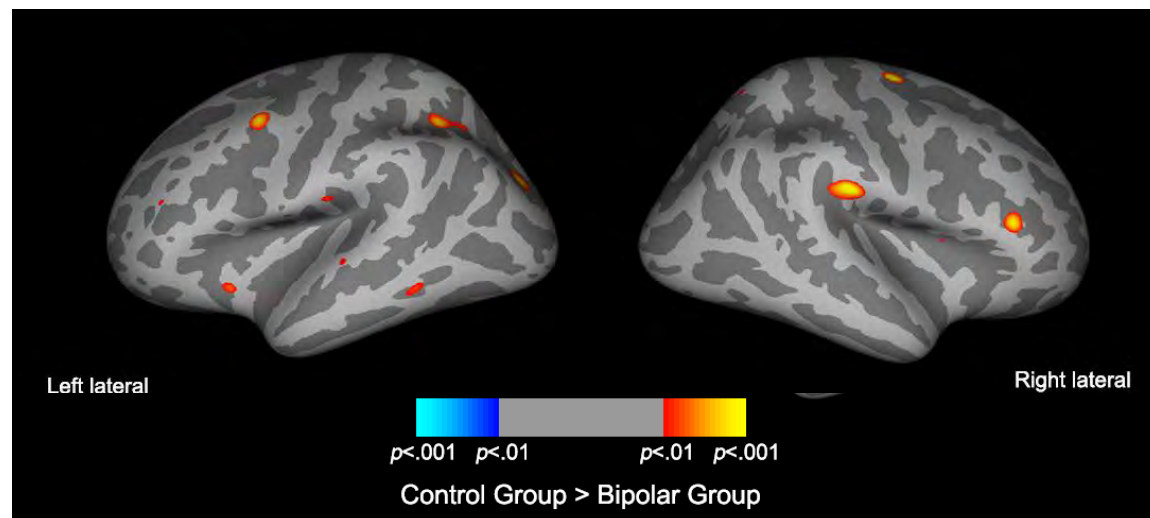
Great Visualization!!



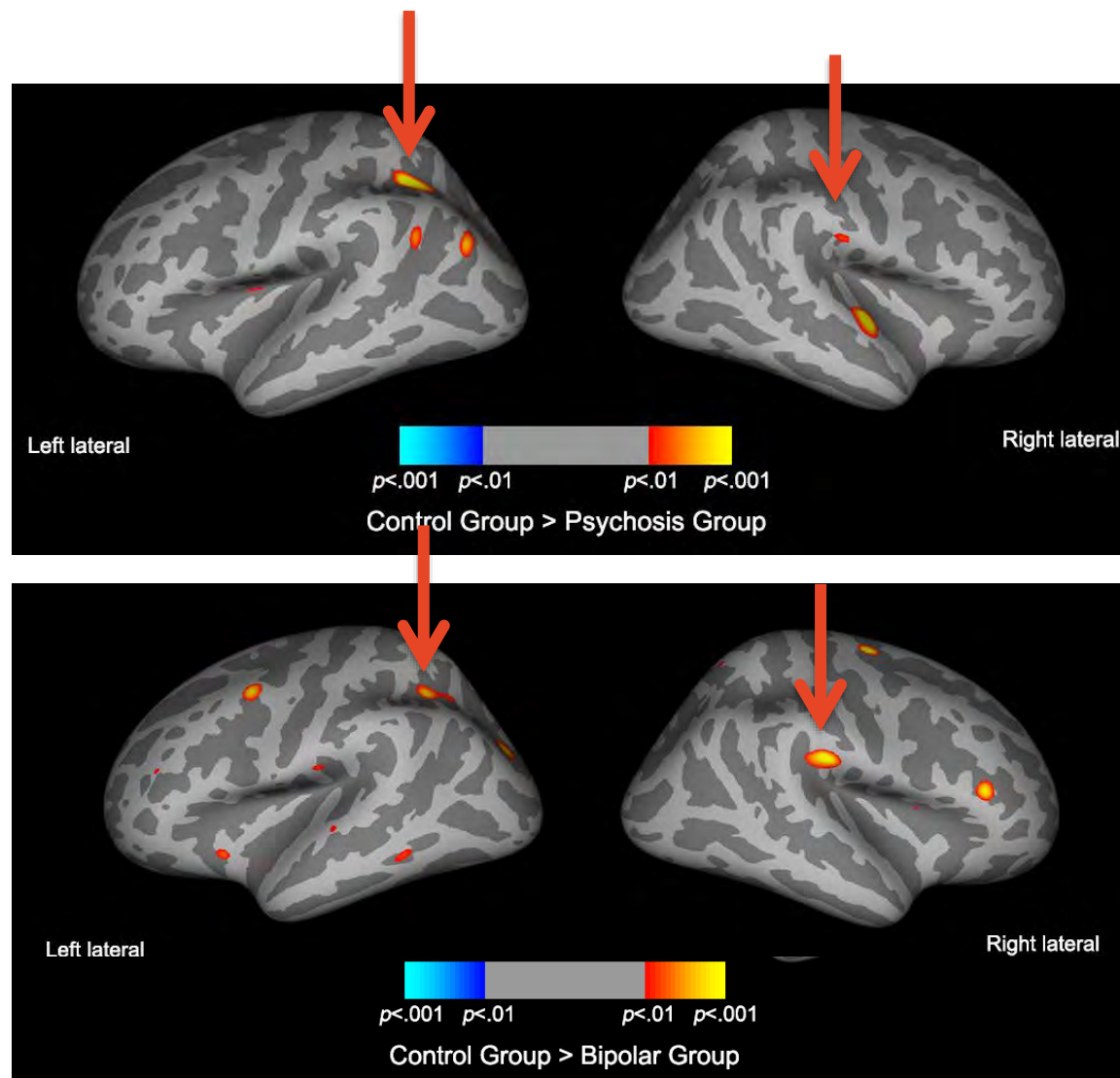
Different cortical thinning patterns



- Different pattern of cortical thinning between young bipolar and psychosis subjects.
- Psychosis similar to reports in older patients
- Bipolar similar to reports in pediatric BPD



Similar pathology = similar cognitive deficits



- Shared regions of cortical thinning were strongly related to neurocognitive deficits commonly seen in young people with either psychosis or bipolar disorder.
- ↓ Visual sustained attention, semantic verbal fluency, verbal learning and verbal memory.

Neurotoxic Effects of Alcohol

Neurodegeneration

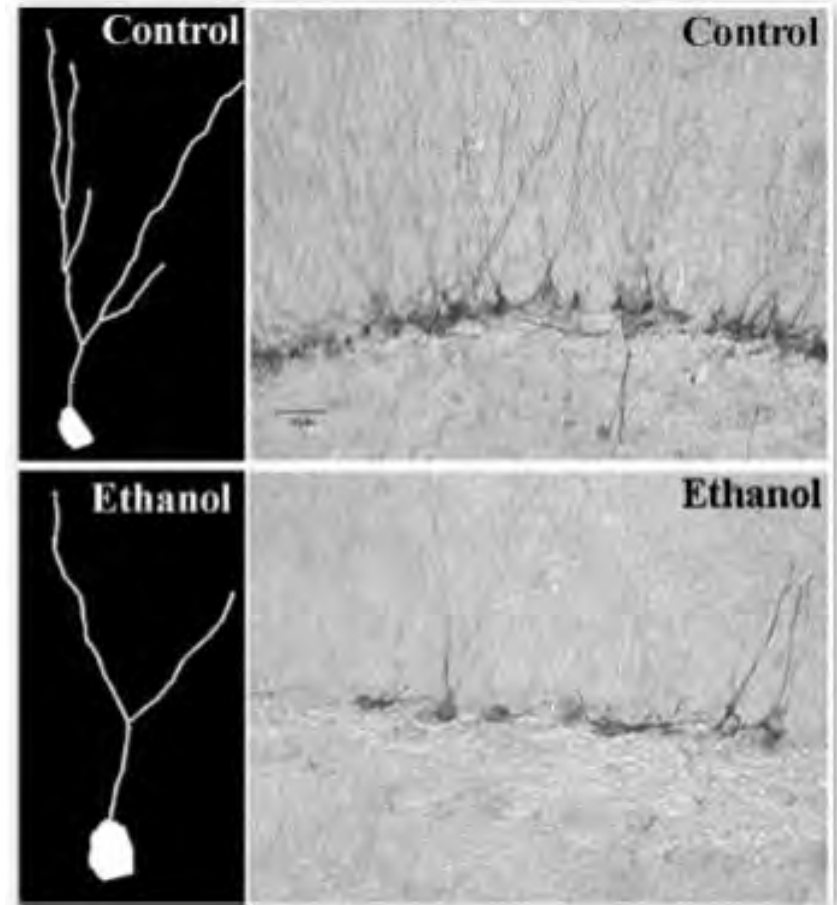
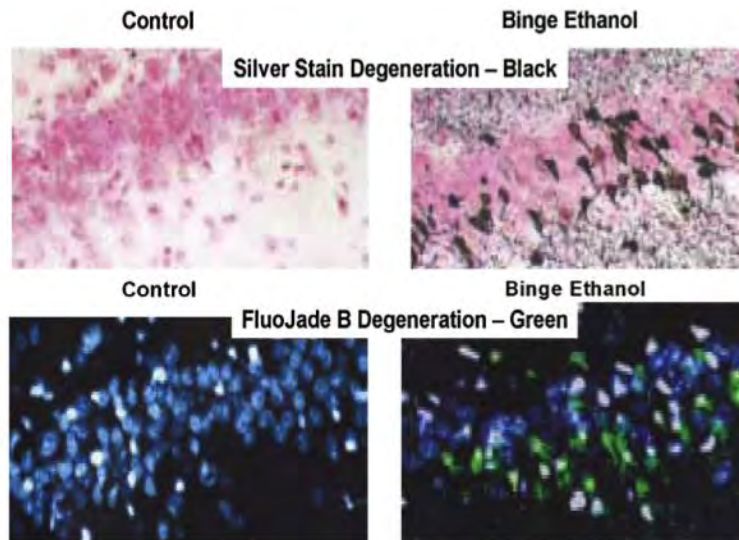


Figure: Alcohol reduces new neuron dendritic growth.
Crews F. & Boettiger C.

Neurotoxic Effects of Alcohol

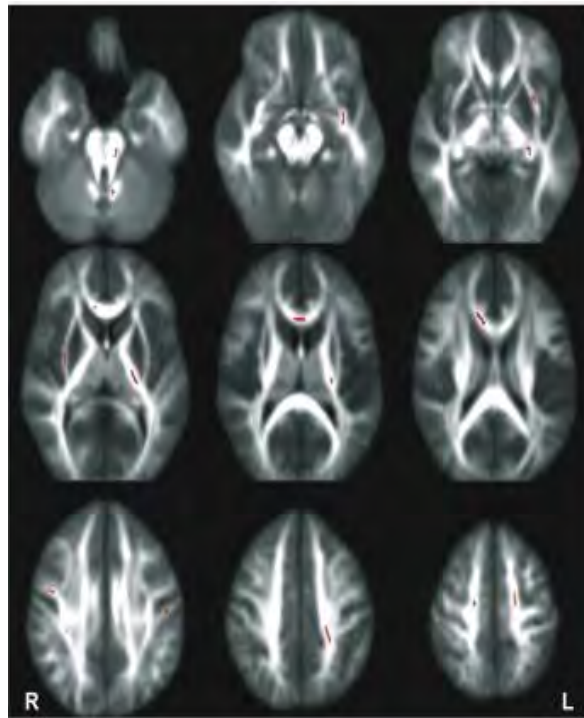
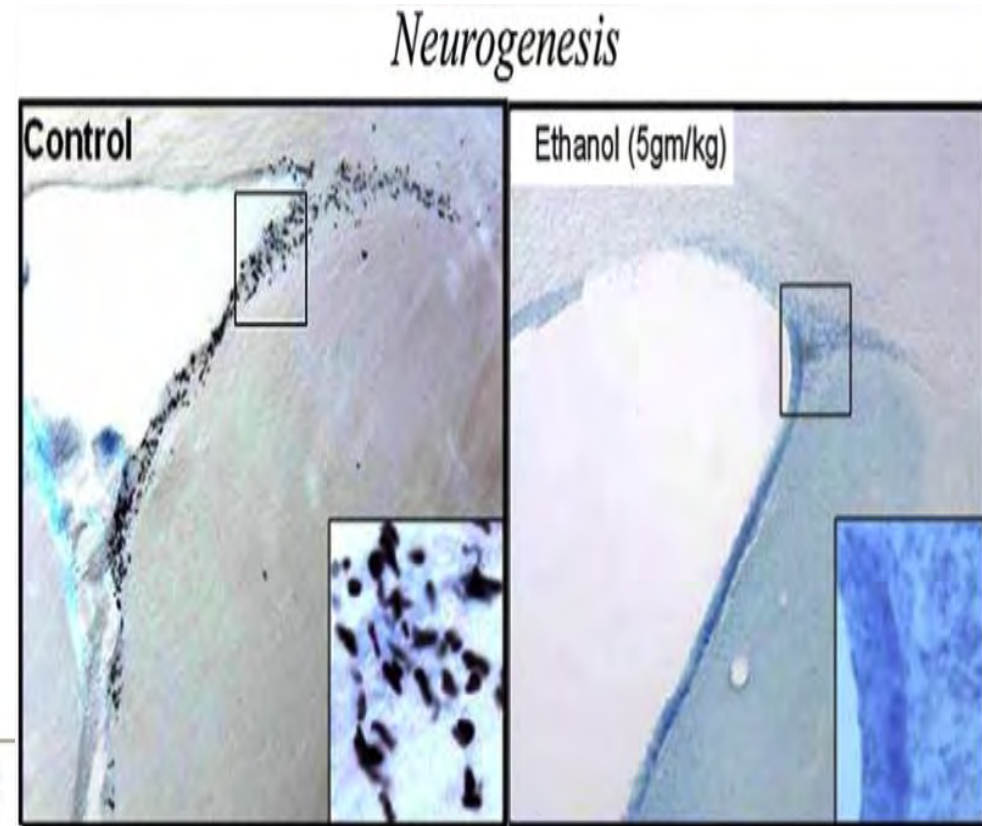


Figure: Clusters (darkened areas) overlaid on average fractional anisotropy mask highlight where binge drinking adolescents had lower fractional anisotropy than controls. McQueeney T, et al



Regional Effects of Alcohol

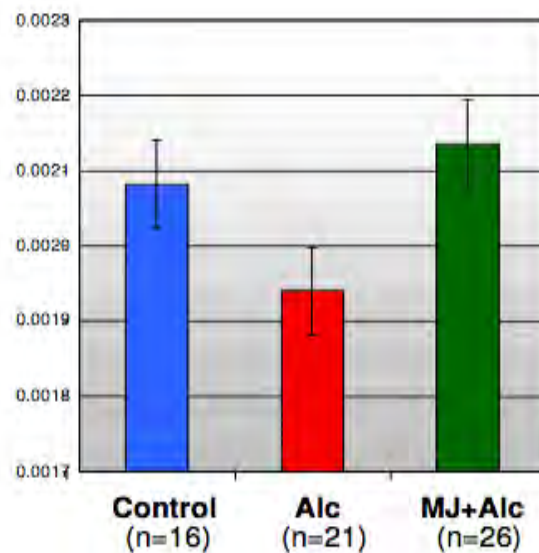


Figure: Hippocampal volume for adolescents with different substance use patterns. Squeglia L et al

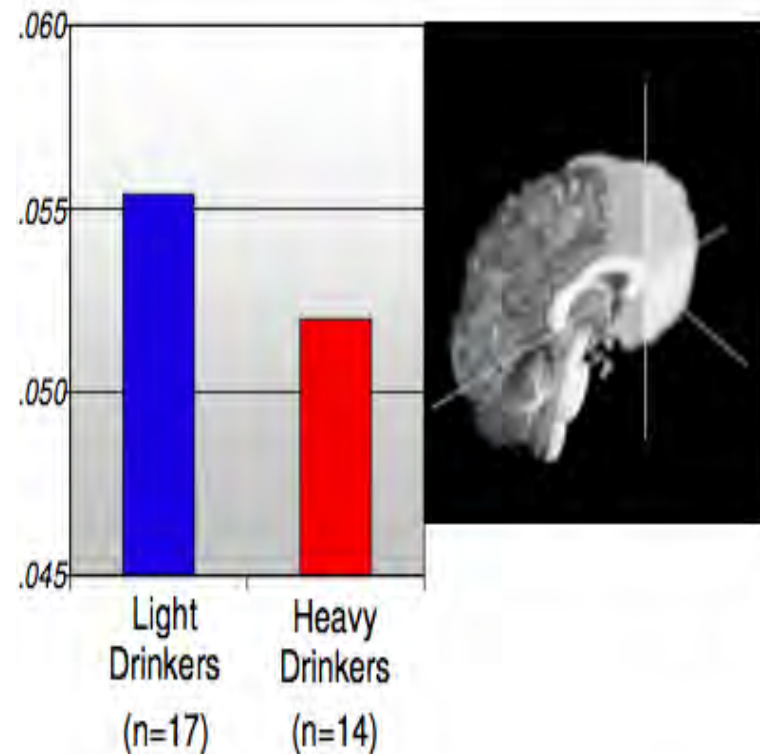
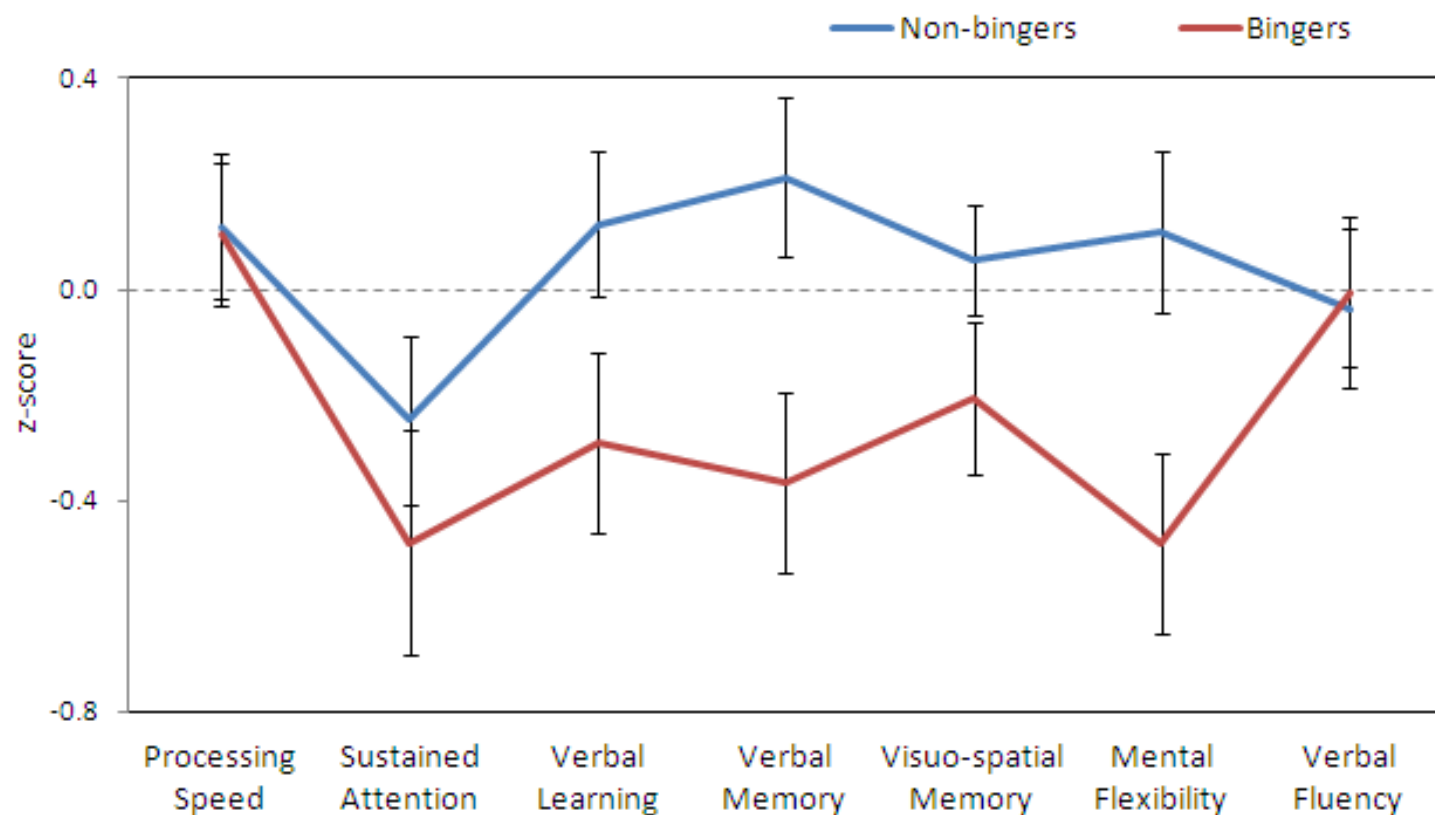


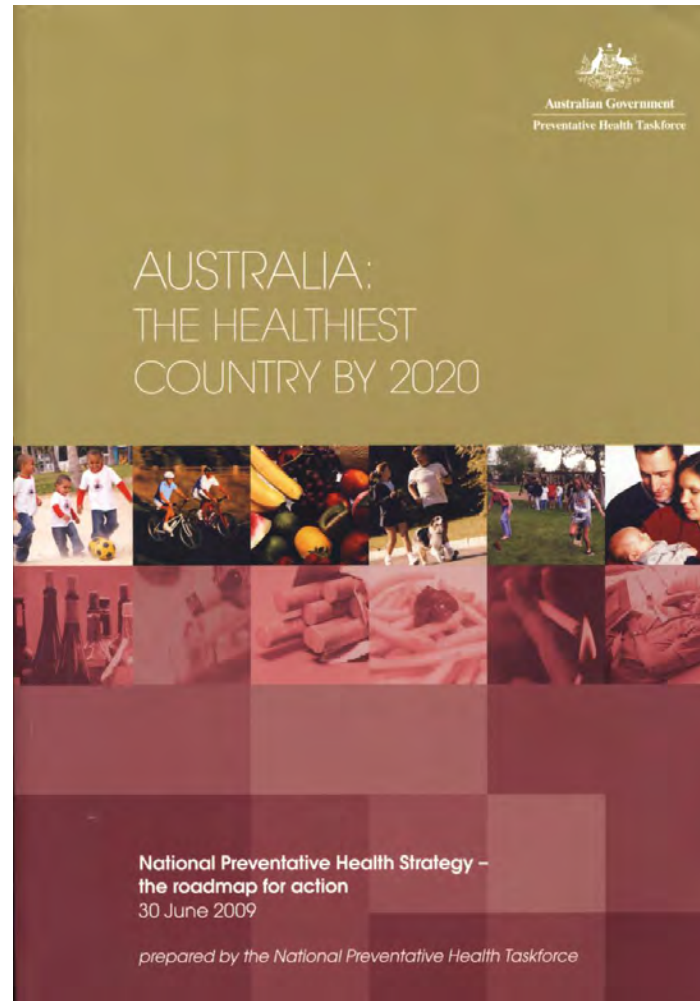
Figure: Ventral prefrontal volume in adolescents with minimal and heavy drinking histories; ventral prefrontal region is highlight in white in the figure to the right. Squeglia L et al

Neuropsychological differences between binge drinkers and non-bingers with co-morbid mood disorders



- Figure: Profile of neuropsychological measures in mood disorder non-bingers (N=54; blue) versus binge drinkers (N=61; red)

Alcohol-related Policy: Fearful and Reactive

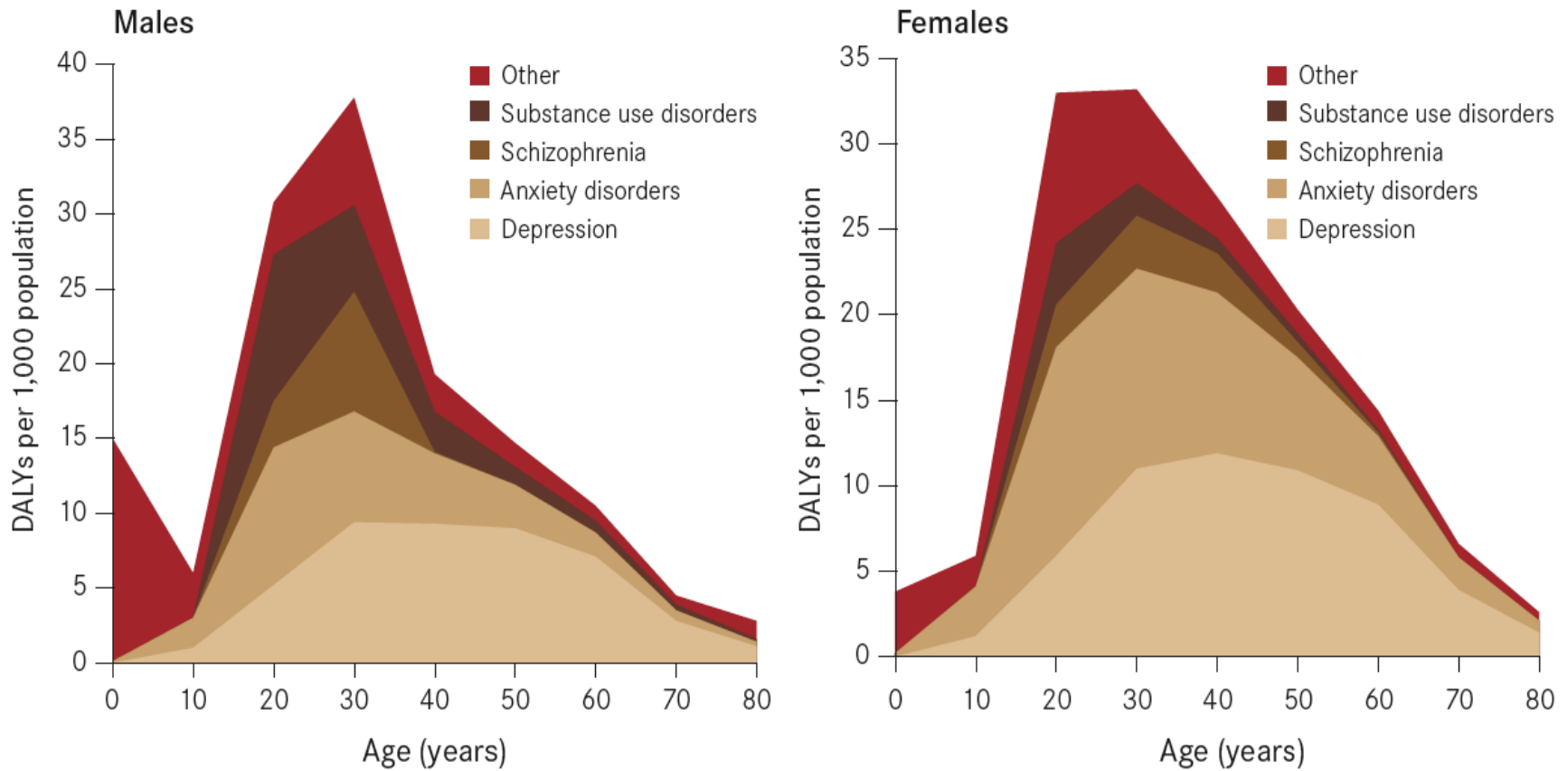


Public Policy Issues

- Community attitudes to alcohol use and particularly early alcohol use
 - Parental and adult attitudes
 - Community leadership vs common role models
 - Pricing and taxation issues
 - Presentation Issues – high alcohol levels
- Access to alcohol at early ages
- Moderation of alcohol use with age and changing patterns – but less in those with existing problems

Adolescent onset of major disorders

Figure 19 Incident YLD rates per 1,000 population by mental disorder, age and sex, Victoria, 2001



Some Insights - II

- **Childhood-onset disorders:**
- variable impacts of life-long development:
- differing effects of neurodevelopmental vs emotional
- **More severe Adolescent disorders:**
 - Very common
 - At least half have continuing impacts into adult life
 - Need serious early and effective intervention

But nothing really matters much, it's doom alone that counts



I was burned out from exhaustion, buried in the hail

Poisoned in the bushes an' blown out on the trail

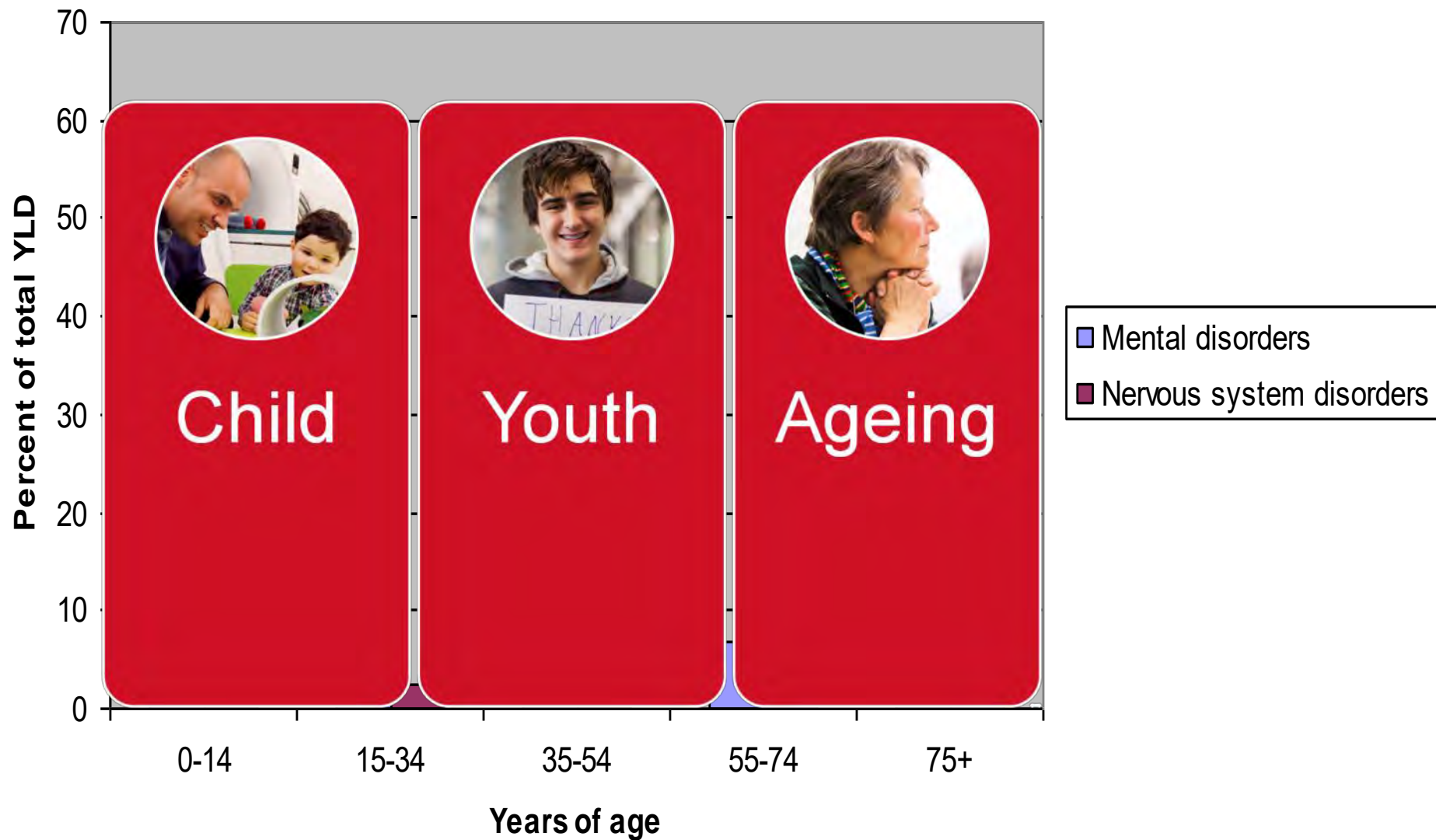
Hunted like a crocodile, ravaged in the corn

"Come in," she said, "I'll give you shelter from the storm"

Bob Dylan, Nobel Prize, Literature 2016

The name (diagnosis) doesn't really matter much, it's a better future (SOCIAL FUNCTION) that counts!!

Percentage distribution of YLD by mental disorders and nervous system disorders, Australia 1996



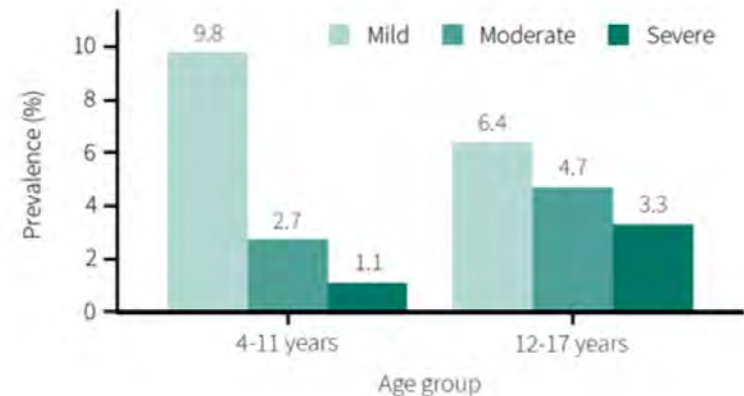
Child and Youth Prevalence: 2015

2015

The Mental Health of Children and Adolescents

REPORT ON THE SECOND AUSTRALIAN
CHILD AND ADOLESCENT SURVEY
OF MENTAL HEALTH AND WELLBEING

Figure 6: Severity of mental disorders experienced by 4-17 year-olds in the past 12 months by age group



Impacts of Mental Disorders

Figure 13: Days absent from school in the past 12 months due to mental disorder symptoms

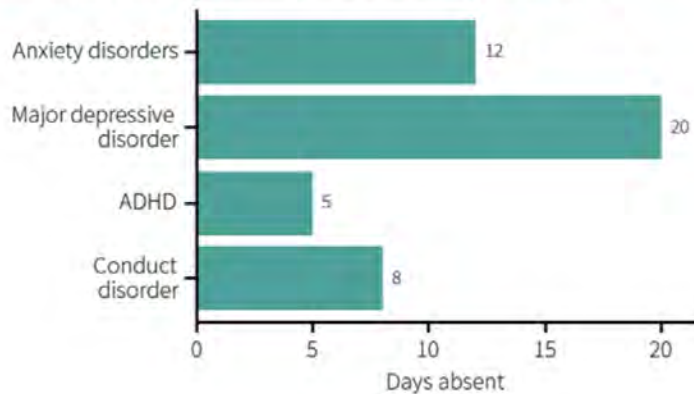
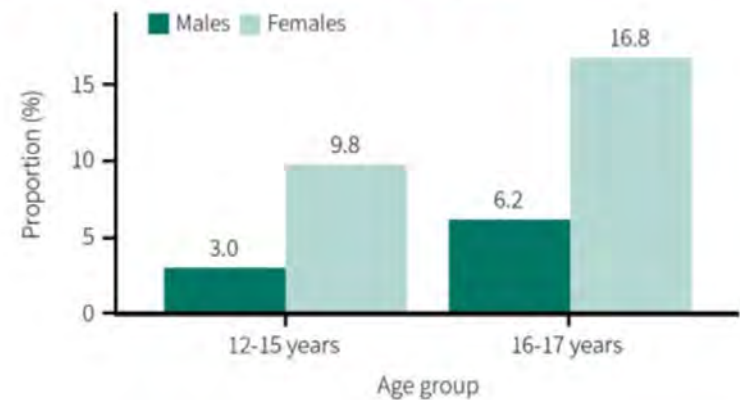


Figure 17: Self harm in the past 12 months in 12-17 year-olds by sex and age group



OECD Priorities

BMJ



BMJ 2013;237:f5270 doi: 10.1136/bmj.f5270 (Published 18 September 2013)

Page 1 of 3

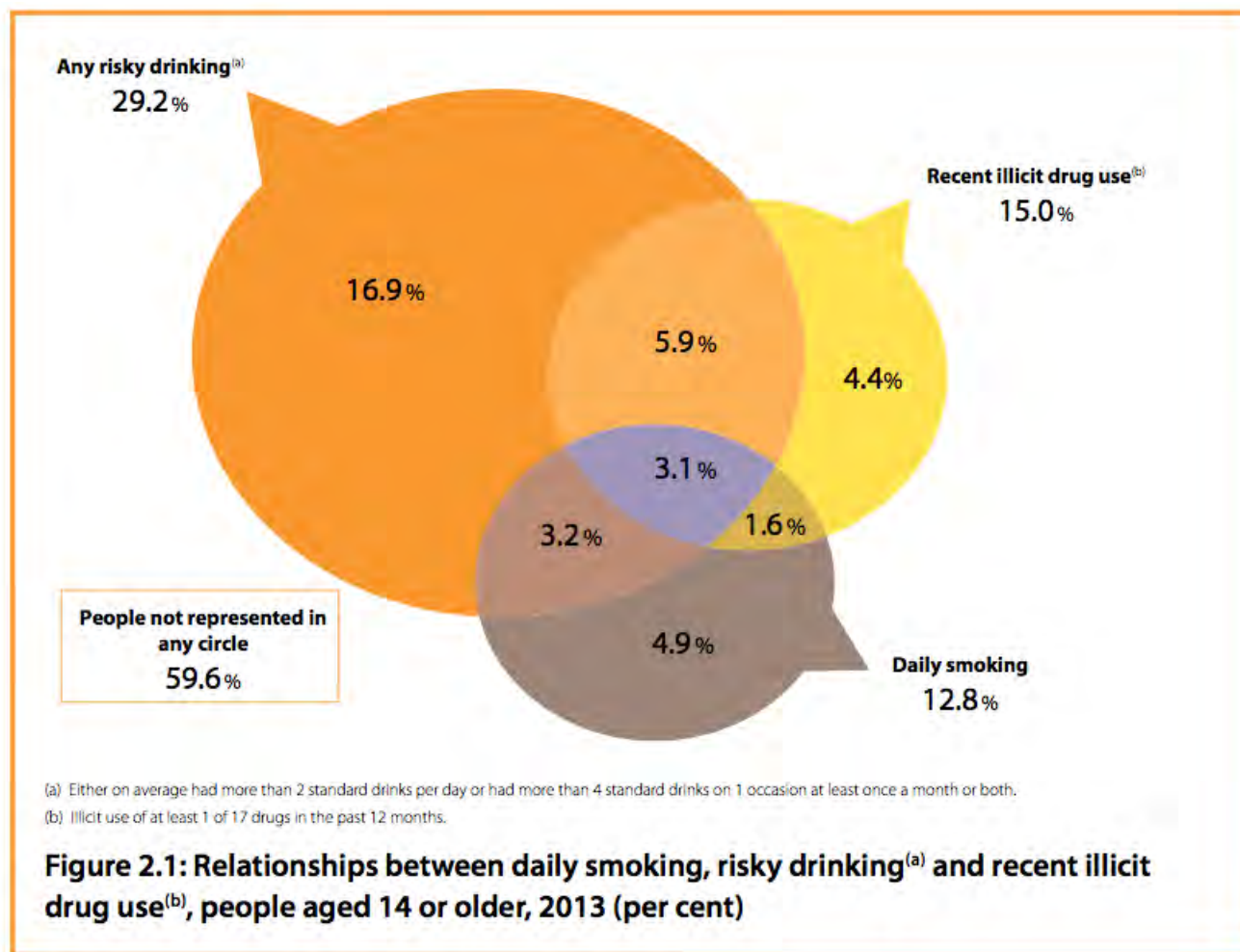
EDITORIALS

Adolescents and young adults who are not in employment, education, or training

Their problems are more than economic

Jan Scott *professor of psychiatry*¹, David Fowler *professor of clinical psychology*², Pat McGorry *professor of youth mental health*³, Max Birchwood *research director*⁴, Eoin Killackey *associate professor*³, Helen Christensen *executive director*⁵, Nicholas Glozier *professor of psychiatry*⁶, Alison Yung *professor of psychiatry*⁷, Paddy Power *consultant in youth mental health*⁸, Merete Nordentoft *professor of psychiatry*⁹, Swaran Singh *head of department*¹⁰, Elisa Brietzke *professor of psychiatry*¹¹, Simon Davidson *professor of child and adolescent psychiatry*¹², Philippe Conus *professor of psychiatry*¹³, Frank Bellivier *professor of psychiatry*¹⁴, Richard Delorme *professor of child and adolescent psychiatry*¹⁵, Iain Macmillan *consultant psychiatrist*¹⁶, John Buchanan *head of department*¹⁷, Francesc Colom *clinical psychologist*¹⁸, Eduard Vieta *professor of psychiatry*¹⁸, Michael Bauer *head of department*¹⁹, Phillip McGuire *head of department*²⁰, Kathleen Merikangas *head of department*²¹, Ian Hickie *director*²²

Patterns of use of Common Substances: National Household survey 2013



Brisbane Longitudinal Study of Adolescent Twins (from 1992, Ages 12-30, n= 3500)



› Nick Martin & Naomi Wray – QIMR & QBI

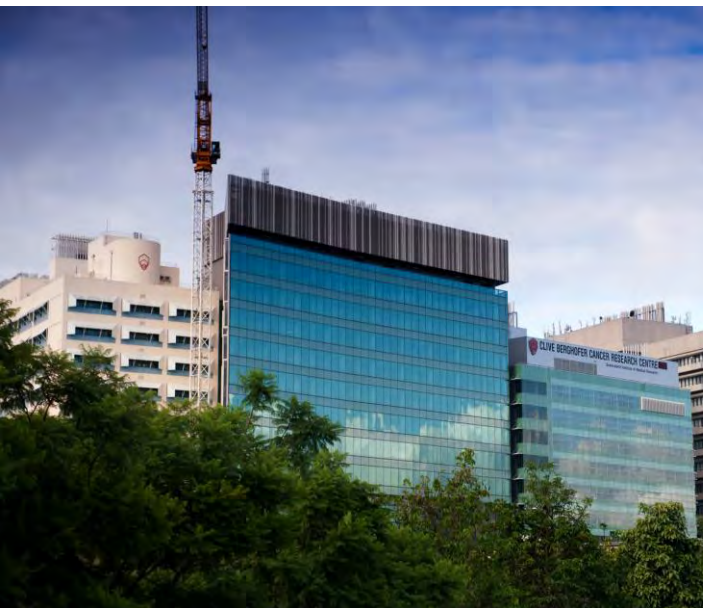


Figure 1. Brisbane Longitudinal Twin Study

[Sample size now; projected end 2015]

Adolescent twins and sibs

12	<ul style="list-style-type: none"> - Personality [2900; 3800] - Psychiatric signs [1400; 2300] - Cognition [200; 1100] - Sleep patterns [1000] - Inattention [1000] - Vitamin D [2644] - Antibodies [2644]
14	<ul style="list-style-type: none"> - Personality [2200; 3100] - Psychiatric signs [1100; 2000] - Binocular Rivalry [800; 1700] - Vitamin D [2130] - Antibodies [2130]
16	<ul style="list-style-type: none"> - Personality [2500; 3200] - Psychiatric signs [1500; 2000] - Cognition [2500; 3200] - Brain Imaging [80; 800] - Migraine [1000; 1800] - Vitamin D [2233] - Antibodies [2233]

Young Adults

21-29	<ul style="list-style-type: none"> - Brain imaging [800; 1350] - Neuroticism [800; 1800] - Psychiatric signs [800; 1800] - Hair Cortisol [500] - Stress [500]
18-30	<ul style="list-style-type: none"> - Psychiatric diagnosis [625; 3561] - Substance use [703; 3561] - Life events [703; 3561]

Longitudinal:

Vitamin D; Antibodies; Neuroticism (JEPQ, NEO); Psychiatric signs (SPHERE);

Cross-sectional (^to be longitudinal):

Hair Cortisol

^Cognition (Verbal, Performance IQ, Working Memory, Information Processing);

Binocular rivalry (Rivalry rate);

^Brain imaging (sMRI, dTI, fMRI, & N-back); Substance use (Alcohol, Tobacco, Recreational drugs);

Sleep patterns (Actigraphy);

Psychiatric diagnosis (Psychosis Screen, CIDI: Depression, Phobias, Panic Disorder);

Life events/social support (e.g. early home environment, family relationships, traumatic events, socioeconomic factors).

Psychological Medicine (2012), 42, 1249–1260. © Cambridge University Press 2011
doi:10.1017/S0033291711002431

ORIGINAL ARTICLE

Genetic co-morbidity between neuroticism, anxiety/depression and somatic distress in a population sample of adolescent and young adult twins

N. K. Hansell¹*, M. J. Wright¹, S. E. Medland¹, T. A. Davenport², N. R. Wray¹, N. G. Martin¹ and I. B. Hickie²

¹ Genetic Epidemiology, Queensland Institute of Medical Research, Brisbane, Australia

² Brain and Mind Research Institute, University of Sydney, Sydney, Australia

Background. Genetic studies in adults indicate that genes influencing the personality trait of neuroticism account for substantial genetic variance in anxiety and depression and in somatic health. Here, we examine for the first time the factors underlying the relationship between neuroticism and anxiety/depressive and somatic symptoms during adolescence.

Method. The Somatic and Psychological Health Report (SPHERE) assessed symptoms of anxiety/depression (PSYCH-14) and somatic distress (SOMA-10) in 2459 adolescent and young adult twins [1168 complete pairs (35.4% monozygotic, 53% female)] aged 12–25 years (mean = 15.5 ± 2.9). Differences between boys and girls across adolescence were explored for neuroticism, SPHERE-34, and the subscales PSYCH-14 and SOMA-10. Trivariate analyses partitioned sources of covariance in neuroticism, PSYCH-14 and SOMA-10.

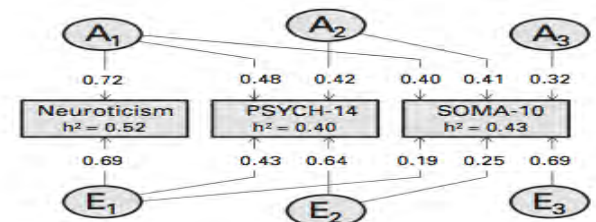
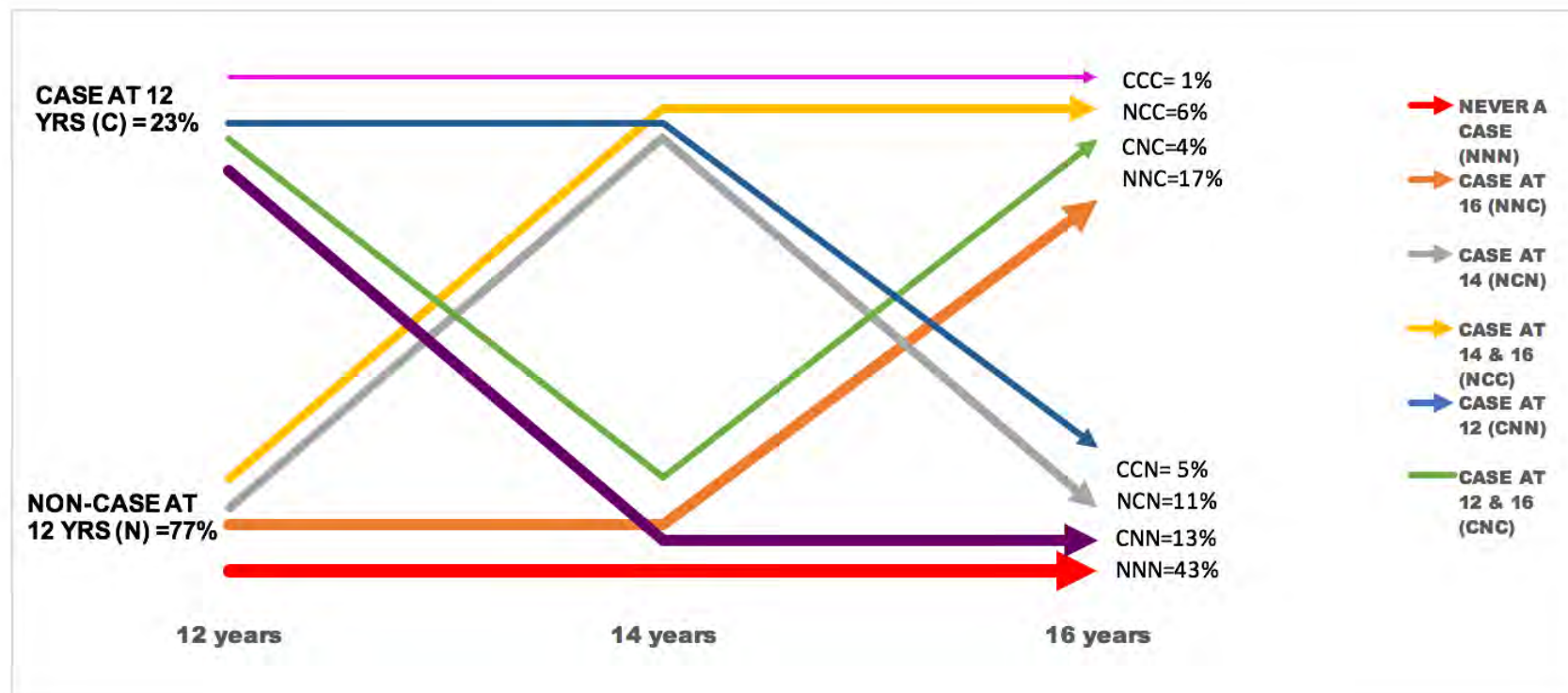


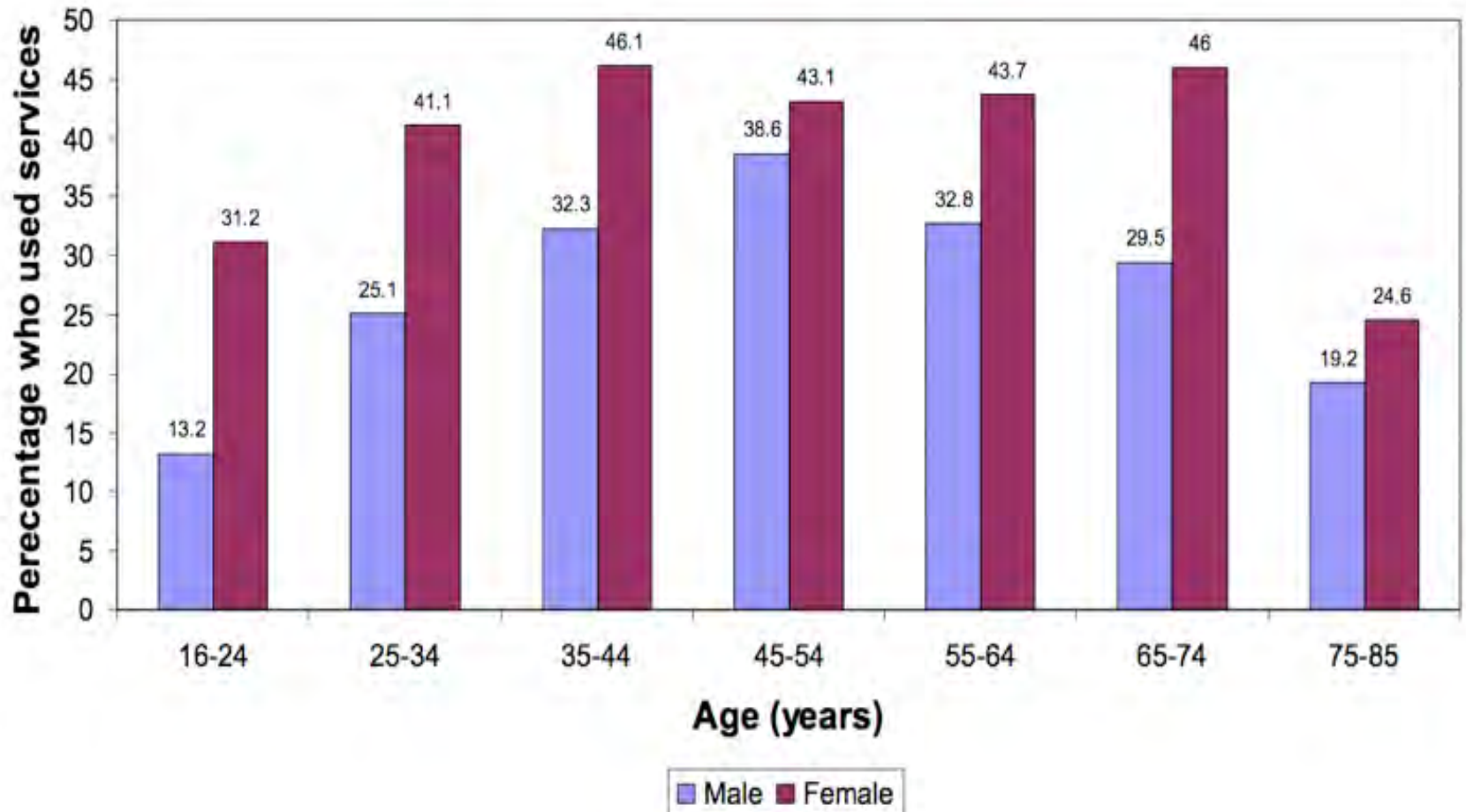
Fig. 3. Parameter estimates for the trivariate AE Cholesky model showing covariation between neuroticism, PSYCH-14 and SOMA-10. The model includes additive genetic (A1, A2, A3) and unshared environmental (E1, E2, E3) sources. Estimates are standardized such that when squared they indicate the percentage of variance accounted for. The factors A1 and E1 account for all of the variance for neuroticism (i.e. they include specific genetic (23%) and environmental (33%) variance for neuroticism), while the factors A2 and E2 are independent of neuroticism [Note: A2 and E2 include specific genetic (7%) and environmental (36%) variance for PSYCH-14]. Heritability (h^2) is shown for each variable.

Transitions in 'caseness' in early teenage period

Figure 1: Schematic diagram representing the different trajectories between depression caseness (C) and non-caseness (N) for 600 individuals who completed three consecutive SPHERE assessments at 12, 14 and 16 years (see text for details).



Service use by age & sex



Key Issues for mental health promotion and early intervention for young people

– 1. Improving the range of key outcomes

– A. Maximising economic, educational and social participation

- OECD focus on 'NEETs' in the 18-25 (30) year old age group

- Requiring much more specific focus

– C. Preventing development of alcohol/substance misuse

- Major community and personal issue

– D. Improving physical health outcomes

– E. Prevention of syndrome progression

- The most contentious but perhaps the least important

Supporting 'mental wealth' and resilience

- **Twin Objectives for the individual:**
- Personal Autonomy **AND** Social Connectedness
- **Critical Aspects of transition**
 - Entry to study, exam periods, professional developments, transition to work environments
- **Role of Institution (beyond 'duty of care')**
 - Inverse rule of connection
 - Paternalism vs partnerships
 - Work experience and Education

Personal level: What should we be supporting? and Personal responsibility or Organisational Action

- 1. Sleep-Wake Cycle Maintenance
- 2. Physical Activity
- 3. Reduced alcohol and other drug misuse
- 4. Social participation
 - Within the education structures
 - Across the education facility
- 5. Active Social connection – and at stressful periods
- 6. Stress-management
- 7. Self-monitoring and learning

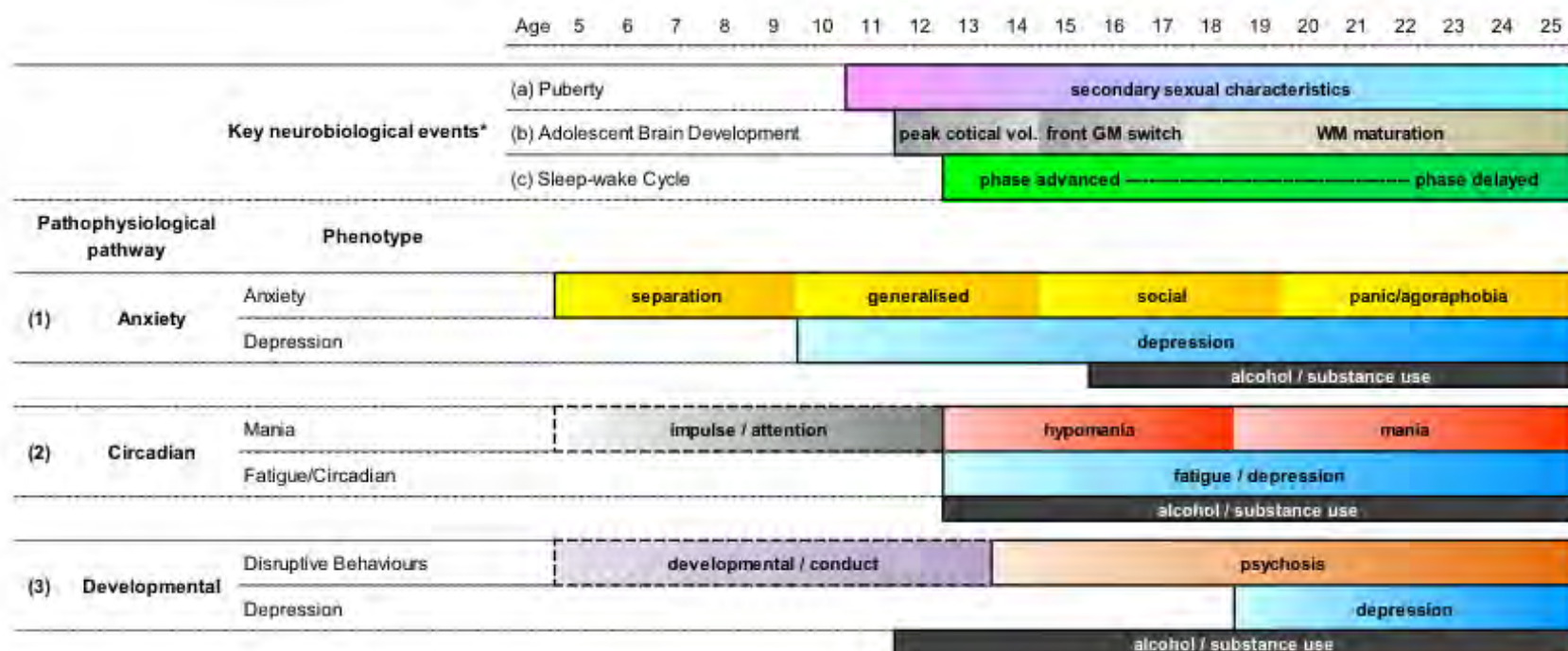
Personal Devices – When/What will you monitor

- Mood trackers
- Sleep Trackers
- Physical Activity Trackers
- Social Connection use

- Exam times:
- **Transitions in education and work experiences**
- **Transitions in life – Relationships Families etc**

Hypothetical Trajectories/Pathways to Adolescent-Onset Depressive Disorders

- PROPOSING THREE DOMINANT PATHS:
- ANXIETY, NEURODEVELOPMENTAL, CIRCADIAN



Key Issues for those actually seeking mental health care

1. Developing more personalised care regimes

Role of **TRAJECTORIES AND STAGES** of illness

Models of key pathophysiological pathways – NOT DX

(e.g. anxious, circadian, impaired development)

Staged care is NOT stepped care!!

2. Delivering evidence-based and personalised care at scale

Designated services (Headspace +)

E-health developments (full range of services online)

Actively addressing mental health care

- Is there access to high quality care?
 - Issues of geography and price
- Is it facilitated by the institution?
 - Are pathways in place and promoted?
- What are the options in care?
 - Online entry
 - Clinical services
- Providing much better evidence
 - Its an educated audience
- What are the personal (beliefs and attitudes) barriers
 - Do interventions actually work?
 - Does the downside outweigh any upside?
 - Issues of culture, social group support, responses of the institution

Where to get more information??

- On-line
 - Aus has many!!
 - (beyondblue, black dog, reach out, orygen youth health, headspace)
 - Head to health (Aus Govt)
- In-person
 - Access to Psychological and Medical Care
- Levels of Care
 - Which specialists
- Evidence-based guidelines etc
 - NICE etc, NIMH etc
- **DO A COGNITIVE-BEHAVIOURAL COURSE!!!! (online or in person)**

The screenshot shows the beyondblue website. At the top, there is a header with the beyondblue logo (a stylized butterfly) and the text "beyondblue Depression Anxiety". To the right of the logo is a search bar and a list of contact options: "1300 22 4636", "Chat online", "Email us", "Online forums", "Register", and "Login". Below the header is a navigation menu with links: "Get support", "The facts", "Who does it affect?", "Get involved", "Our stories", "Healthy places", "Media", and "Make a donation". The main content area features a large banner with the text "Our commitment to reconciliation" over a colorful Aboriginal dot pattern. Below the banner is a row of smaller images and text: "Check-in", "Anxiety", "Heads Up", "BeyondNow", and "NEW MUM?". The bottom section is titled "3 million Australians are living with anxiety or depression" and includes a paragraph: "beyondblue provides information and support to help everyone in Australia achieve their best possible mental health, whatever their age and wherever they live." Below this paragraph are three circular buttons: "Learn about anxiety", "Learn about depression", and "Learn about suicide". To the right of the main content area is a sidebar with two tabs: "In focus" and "Latest news". Under "In focus" are three links: "Are you being bullied?", "When someone you love is being bullied...", and "beyondblue welcomes the marriage equality survey result".

3 million Australians are living with anxiety or depression

beyondblue provides information and support to help everyone in Australia achieve their best possible mental health, whatever their age and wherever they live.

Learn about anxiety

Learn about depression

Learn about suicide


In focus

Latest news

Are you being bullied?

When someone you love is being bullied...

beyondblue welcomes the marriage equality survey result

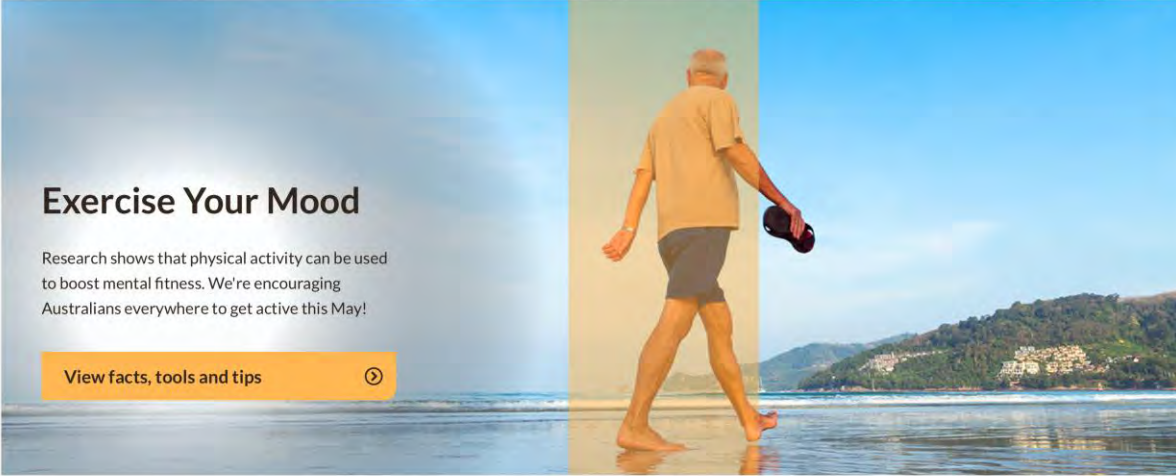


**Black Dog
Institute**

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Exercise Your Mood

Research shows that physical activity can be used to boost mental fitness. We're encouraging Australians everywhere to get active this May!

[View facts, tools and tips](#)

News

The latest news in mental health research

How to exercise when you feel like you can't

We all know about the benefits of exercise, but what about those who can't find the motivation to do it? Here are some tips on how you can take on exercise when you aren't at your best.

[Read more](#)

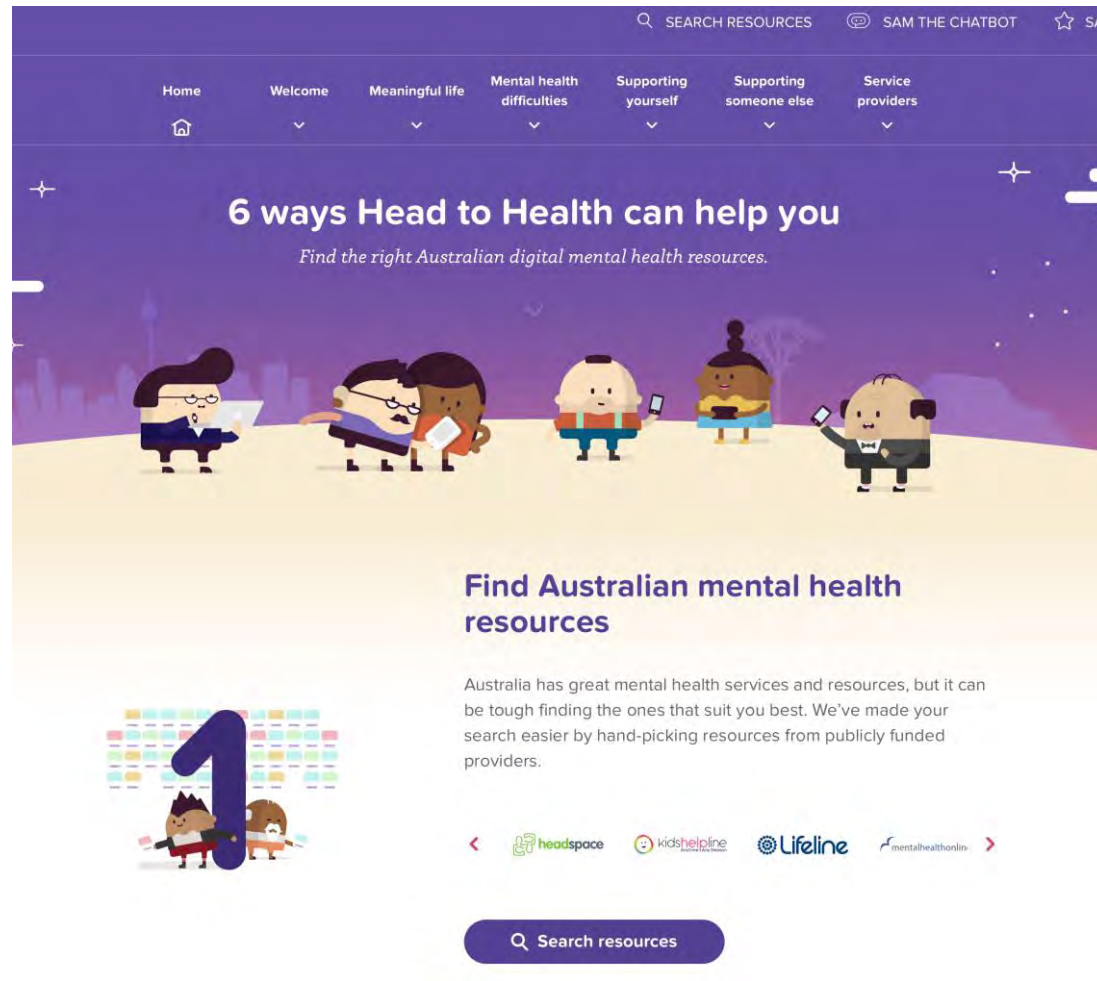
[World Bipolar Day: what we know in 2018](#)

[Why being present can help this long weekend](#)


[Australian-first 'burnout' study seeks par...](#)

[See more news](#)

Head to health






self-directed or therapist-guided




mentalhealthonline

Made4Me - Mental Health Self Management

Made-4-Me (M4M) is an interactive 11-week cognitive behavioural program (choose self-directed or therapist-guided) developed by Swinburne University of Technology for self-managing symptoms of anxiety, depression, and panic disorders. The program tailors content to the symptoms you experience.

 Anytime, Anywhere  Free  Therapist-guided

OPEN LINK IN NEW TAB 

 [Share](#)

 [Save](#)

Moodgym – CBT online



Email/username  :






Password:


 Log in


[» Forgotten password](#)


Welcome to moodgym

moodgym is like an interactive self-help book which helps you to learn and practise skills which can help to prevent and manage symptoms of depression and anxiety.

-  Over 1 million users worldwide
-  Anonymous, confidential
-  Secure handling of your data
-  Access anytime, at your own pace
-  Scientifically evaluated

 [New users register here](#)


 [Frequently Asked Questions](#)

 See [Emergency help](#) if you are in crisis or need immediate help.

Looking for other languages?

- ▶ German available at moodgym.de 
- ▶ Norwegian, Dutch, Chinese and Finnish no longer available - see [FAQ](#)

Mindspot clinical service



Online assessment and treatment
for anxiety and depression

[-A](#) [+A](#) [Login](#)

[Tel. 1800 61 44 34](#) [I Need Urgent Help](#) [>](#)


[Home](#) [Why MindSpot?](#) [Conditions We Treat](#) [Assessments](#) [Our Treatment Courses](#) [Health Professionals](#) [Contact Us](#)

About Us

The MindSpot Clinic is a free telephone and online service for Australian adults troubled by symptoms of anxiety or depression.

We provide free Online Screening Assessments to help you learn about your symptoms, free Treatment Courses to help you to recover, or we can help you find local services that can help.


[Learn more about the MindSpot Clinic](#)



[Start Your Online Assessment](#) [>](#)


[Log In For Treatment](#) [>](#)

How MindSpot Works In 3 Easy Steps




1. Learn

Read the information on this website and try taking the [Depression or Anxiety Quiz](#).



2. Get Assessed

Complete a telephone or [Online Screening Assessment](#). We will provide information about your symptoms and provide recommendations.






3. Treatment

Based on the results of your assessment we may recommend one of our free 8 week [Treatment Courses](#), or provide referrals to other services.


[Take The Brief Depression Quiz](#) [>](#)

[Take The Brief Anxiety Quiz](#) [>](#)

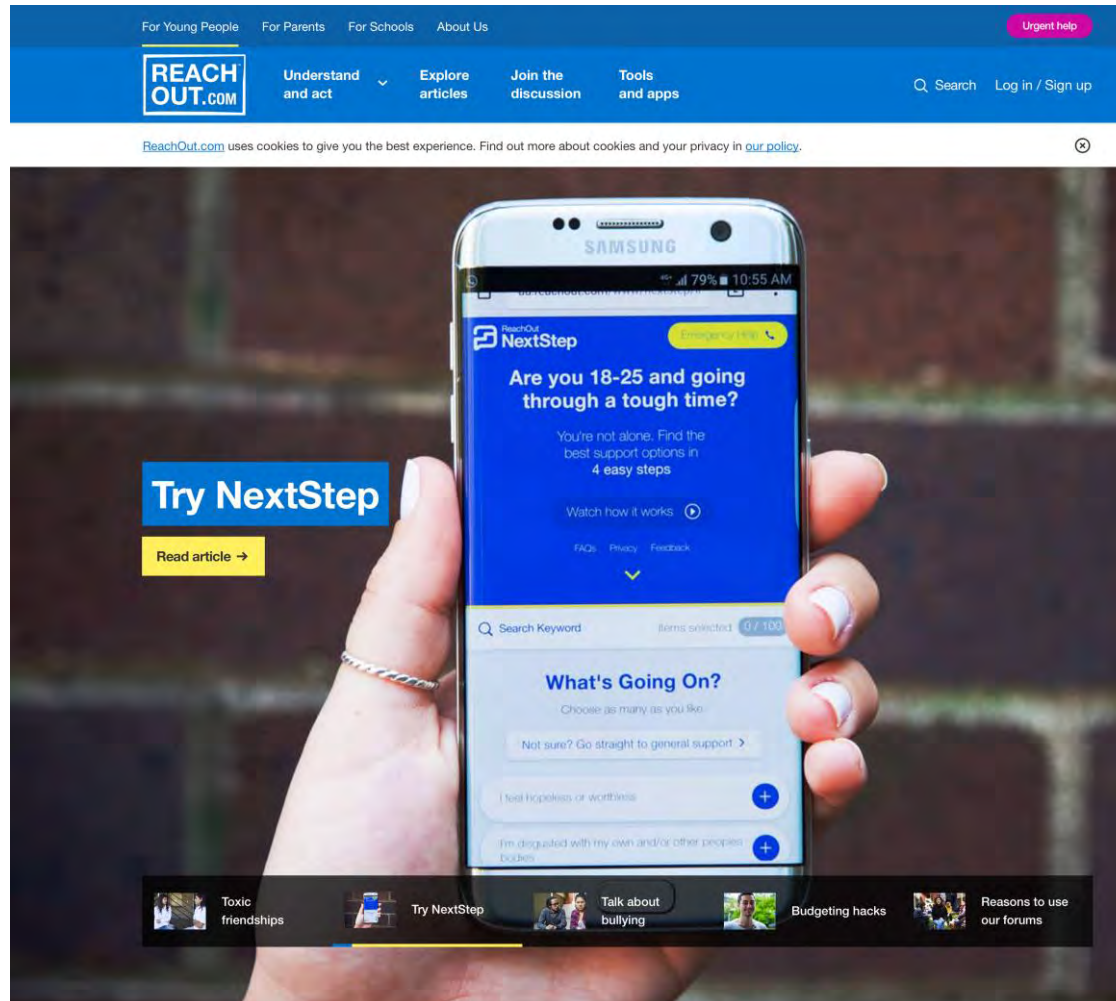
[Our Partners](#)



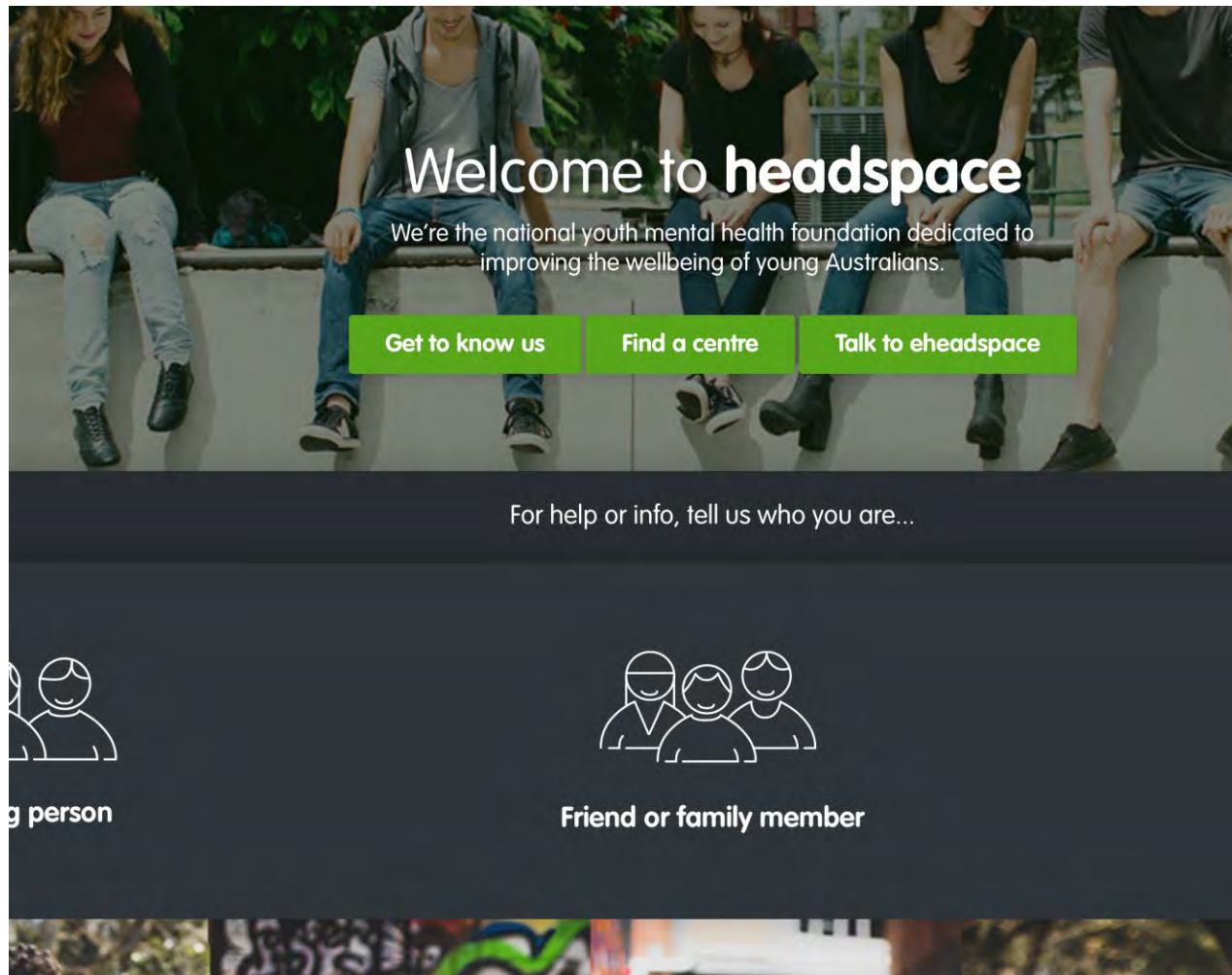
A program supported by



Reachout- next step



Headspace centres



Orygen youth health



Orygen's vision is for all young people to enjoy optimal mental health as they grow into adulthood



Mental ill-health is the number one health issue facing young people worldwide. As the leading cause of disability in those aged between 10 and 24 years, it contributes 45% of the overall burden of disease. There is a powerful case for transformational reform of our current mental health services to accommodate and indeed give pride of place to our young people. Orygen is the engine room driving this reform in Australia and across the globe.



Professor Patrick McGorry AO
Executive Director

Connect with Orygen



Real Challenges in National and Global Mental Health Service Provision

— **ACCESS AND QUALITY!!** (NOT Access OR Quality)

- Staged not stepped care
- Expertise at entry to systems and ongoing
- Person-Centred
- Inclusive of others (families, communities)
- ‘Sub-syndromal’ does NOT equal absence of impairment



Do Psychological Therapies work?

- Very effectively!!
 - Mild-moderate anxiety or depression
 - Utility in primary and secondary prevention and recurrence prevention
- On-line
 - As effective as clinically-based
- Clinically-based
 - Particularly relevant as more severe and more complex

Psychological prevention online

Deady et al. *BMC Psychiatry* (2017) 17:310
DOI 10.1186/s12888-017-1473-1

BMC Psychiatry

RESEARCH ARTICLE

Open Access



eHealth interventions for the prevention of depression and anxiety in the general population: a systematic review and meta-analysis

M. Deady^{1,4*}, I. Choi², R. A. Calvo³, N. Glozier², H. Christensen⁴ and S. B. Harvey^{1,4,5}

Abstract

Background: Anxiety and depression are associated with a range of adverse outcomes and represent a large global burden to individuals and health care systems. Prevention programs are an important way to avert a proportion of

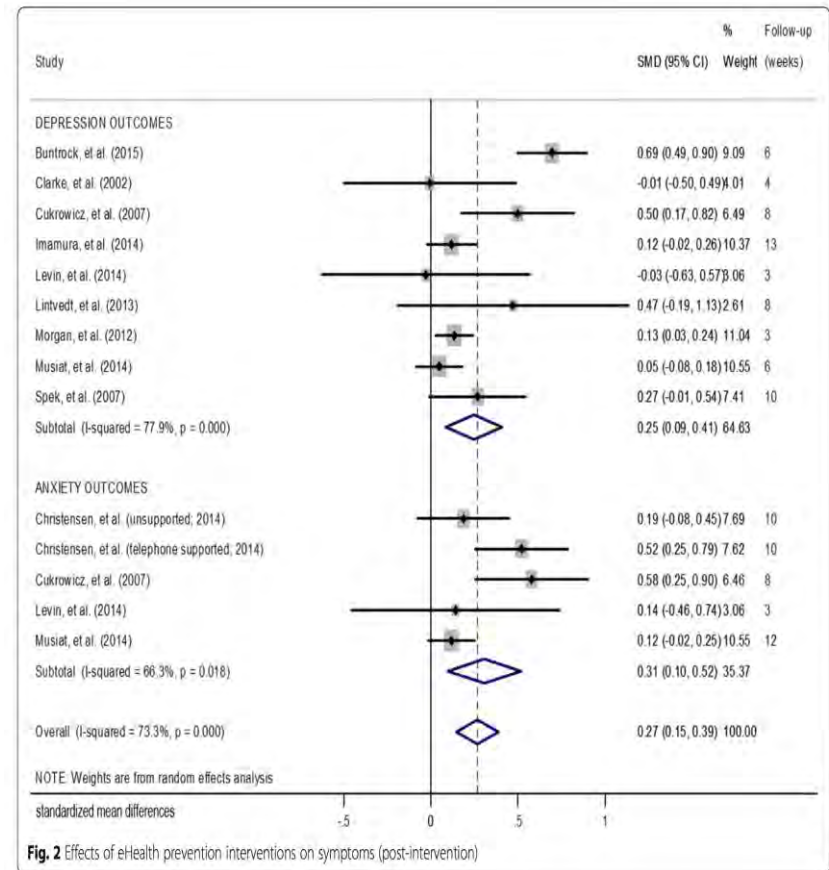


Fig. 2 Effects of eHealth prevention interventions on symptoms (post-intervention)

Using CBT during the intern year

Original Investigation

Web-Based Cognitive Behavioral Therapy Intervention for the Prevention of Suicidal Ideation in Medical Interns: A Randomized Clinical Trial

Constance Guille, MD; Zhuo Zhao, MS; John Krystal, MD; Breck Nichols, MD; Kathleen Brady, MD, PhD; Srijan Sen, MD, PhD

IMPORTANCE In the United States, approximately 1 physician dies by suicide every day. Training physicians are at particularly high risk, with suicidal ideation increasing more than 4-fold during the first 3 months of internship year. Despite this increase, to our knowledge, very few efforts have been made to prevent the escalation of suicidal thoughts among training physicians.

OBJECTIVE To assess the effectiveness of a web-based cognitive behavioral therapy (wCBT) program delivered prior to the start of internship year in the prevention of suicidal ideation in medical interns.

DESIGN, SETTING, AND PARTICIPANTS A randomized clinical trial conducted at 2 university hospitals with 199 interns from multiple specialties during academic years 2009-2010 or 2011-2012. The current study was conducted from May 2009 to June 2010 and May 2011 to June 2012, and data were analyzed using intent-to-treat principles, including last observation carried forward.

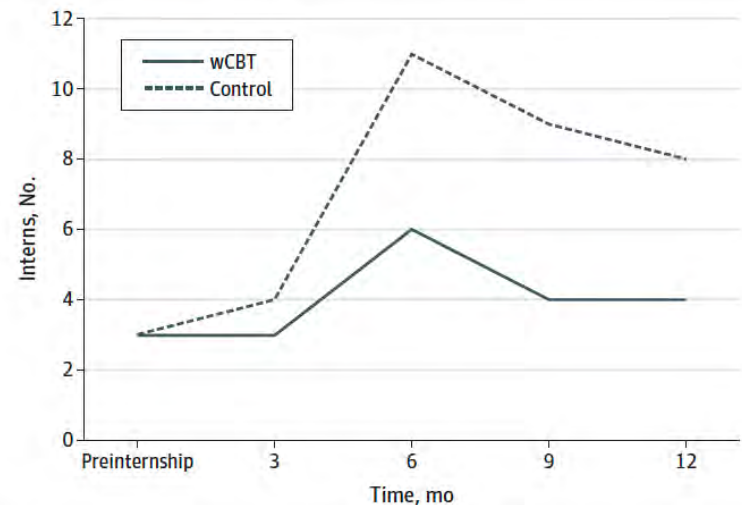
INTERVENTIONS Interns were randomly assigned to 2 study groups (wCBT and attention-control group [ACG]), and completed study activities lasting 30 minutes each week for 4 weeks prior to starting internship year. Participants assigned to wCBT completed online CBT modules and those assigned to ACG received emails with general information about depression, suicidal thinking, and local mental health professionals.

Editorial page 1169

Author Audio Interview at jamapsychiatry.com

Supplemental content at jamapsychiatry.com

Figure 3. Number of Interns Endorsing Suicidal Ideation During Internship Year



wCBT indicates web-based cognitive behavioral therapy.

Antidepressants save lives!

Papers

Association between antidepressant prescribing and suicide in Australia, 1991-2000: trend analysis

Wayne D Hall, Andrea Mant, Philip B Mitchell, Valerie A Rendle, Ian B Hickie, Peter McManus

Abstract

Objective To examine the association between trends in antidepressant prescribing and suicide rates in Australia for 1991-2000.

Design Analysis of databases of suicide and rates of antidepressant prescribing according to age and sex.

Setting Australian Bureau of Statistics data, sales data from the Australian pharmaceutical industry, prescribing data in general practice.

Subjects Men and women aged 15 years and over in 10 year age groups.

examined data for 1977-97 (using official mortality statistics) and data on antidepressant use from surveys of sales to pharmacies.² They found that suicide rates declined over the whole study period, but the rate of decline accelerated after the SSRIs were introduced in 1990. In Hungary in 1984-98 antidepressant prescribing rose steeply after the introduction of SSRIs in the early 1990s and rates of suicide declined, despite steep increases in unemployment and per capita alcohol consumption.⁴

Contrary to these positive findings, however, in Italy Rorhai *et al* did not find any association between

Office of Public Policy and Ethics, Institute for Molecular Bioscience, University of Queensland, Brisbane, Queensland 4072, Australia
Wayne D Hall
professor and director
School of Public Health and Community

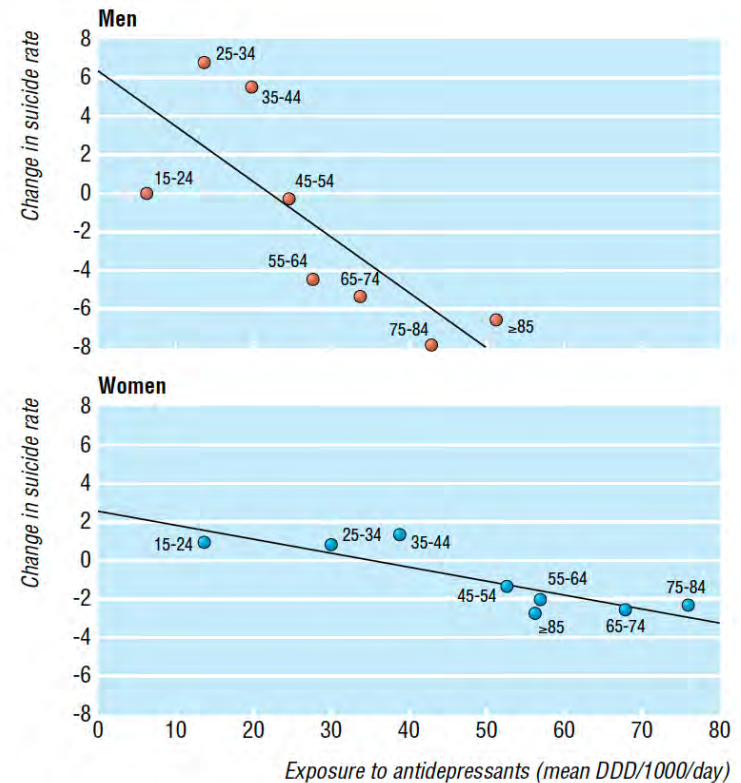


Fig 1 Change in suicide rate by level of exposure to antidepressants in each age group among men and women aged >15 years

Efficacy of antidepressants (2018)

Articles

Comparative efficacy and acceptability of 21 antidepressant drugs for the acute treatment of adults with major depressive disorder: a systematic review and network meta-analysis

Andrea Cipriani*, Toshi A Furukawa*, Georgio Salanti*, Anna Chaimani, Lauren Z Atkinson, Yusuke Ogawa, Stefan Leucht, Henricus G Ruhe, Erick H Turner, Julian P T Higgins, Matthias Egger, Nozomi Takeshima, Yu Hayasaka, Hissei Imai, Kiyomi Shinohara, Aran Tajika, John P A Ioannidis, John R Geddes

Summary

Background Major depressive disorder is one of the most common, burdensome, and costly psychiatric disorders worldwide in adults. Pharmacological and non-pharmacological treatments are available; however, because of inadequate resources, antidepressants are used more frequently than psychological interventions. Prescription of these agents should be informed by the best available evidence. Therefore, we aimed to update and expand our previous work to compare and rank antidepressants for the acute treatment of adults with unipolar major depressive disorder.



Published Online:
February 21, 2018
[http://dx.doi.org/10.1016/S0140-6736\(17\)32802-7](http://dx.doi.org/10.1016/S0140-6736(17)32802-7)
See Online/Comment:
[http://dx.doi.org/10.1016/S0140-6736\(18\)30421-5](http://dx.doi.org/10.1016/S0140-6736(18)30421-5)

Findings We identified 28 552 citations and of these included 522 trials comprising 116 477 participants. In terms of efficacy, all antidepressants were more effective than placebo, with ORs ranging between 2.13 (95% credible interval [CrI] 1.89–2.41) for amitriptyline and 1.37 (1.16–1.63) for reboxetine. For acceptability, only agomelatine (OR 0.84, 95% CrI 0.77–0.97) and fluoxetine (0.88, 0.80–0.96) were associated with fewer dropouts than placebo, whereas clomipramine was worse than placebo (1.30, 1.01–1.68). When all trials were considered, differences in ORs between antidepressants ranged from 1.15 to 1.55 for efficacy and from 0.64 to 0.83 for acceptability, with wide CrIs on most of the comparative analyses. In head-to-head studies, agomelatine, amitriptyline, escitalopram, mirtazapine, paroxetine, venlafaxine, and vortioxetine were more effective than other antidepressants (range of ORs 1.19–1.96), whereas fluoxetine, fluvoxamine, reboxetine, and trazodone were the least efficacious drugs (0.51–0.84). For acceptability, agomelatine, citalopram, escitalopram, fluoxetine, sertraline, and vortioxetine were more tolerable than other antidepressants (range of ORs 0.43–0.77), whereas amitriptyline, clomipramine, duloxetine, fluvoxamine, reboxetine, trazodone, and venlafaxine had the highest dropout rates (1.30–2.32). 46 (9%) of 522 trials were rated as high risk of bias, 380 (73%) trials as moderate, and 96 (18%) as low; and the certainty of evidence was moderate to very low.

Interpretation All antidepressants were more efficacious than placebo in adults with major depressive disorder. Smaller differences between active drugs were found when placebo-controlled trials were included in the analysis, whereas there was more variability in efficacy and acceptability in head-to-head trials. These results should serve evidence-based practice and inform patients, physicians, guideline developers, and policy makers on the relative merits of the different antidepressants.

Efficacy and Acceptability (2018)

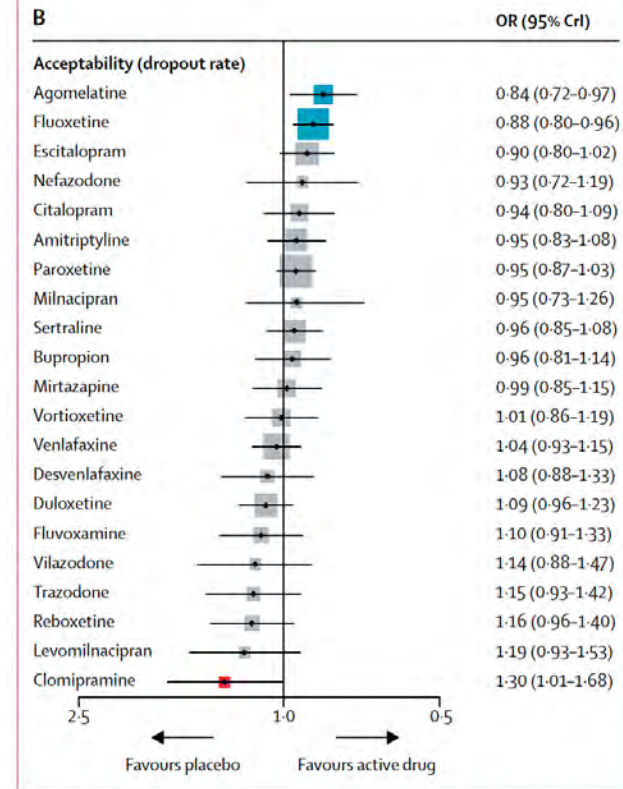
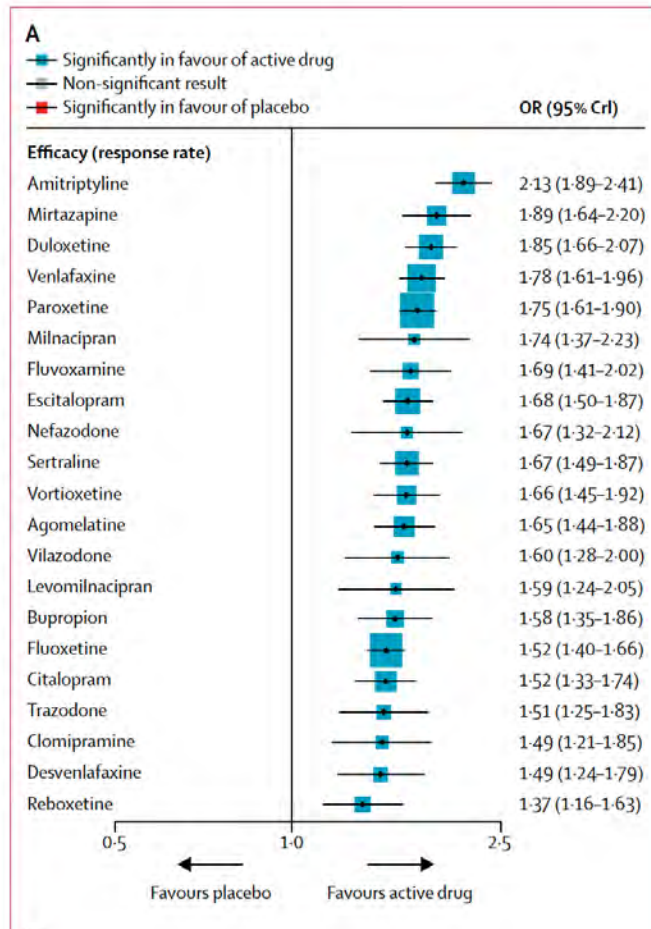


Figure 3: Forest plots of network meta-analysis of all trials for efficacy (A) and acceptability (B)

Antidepressants were compared with placebo, which was the reference compound. OR=odds ratio. CrI=credible interval.

Light-Dark Cycle as the principle driver of rhythms



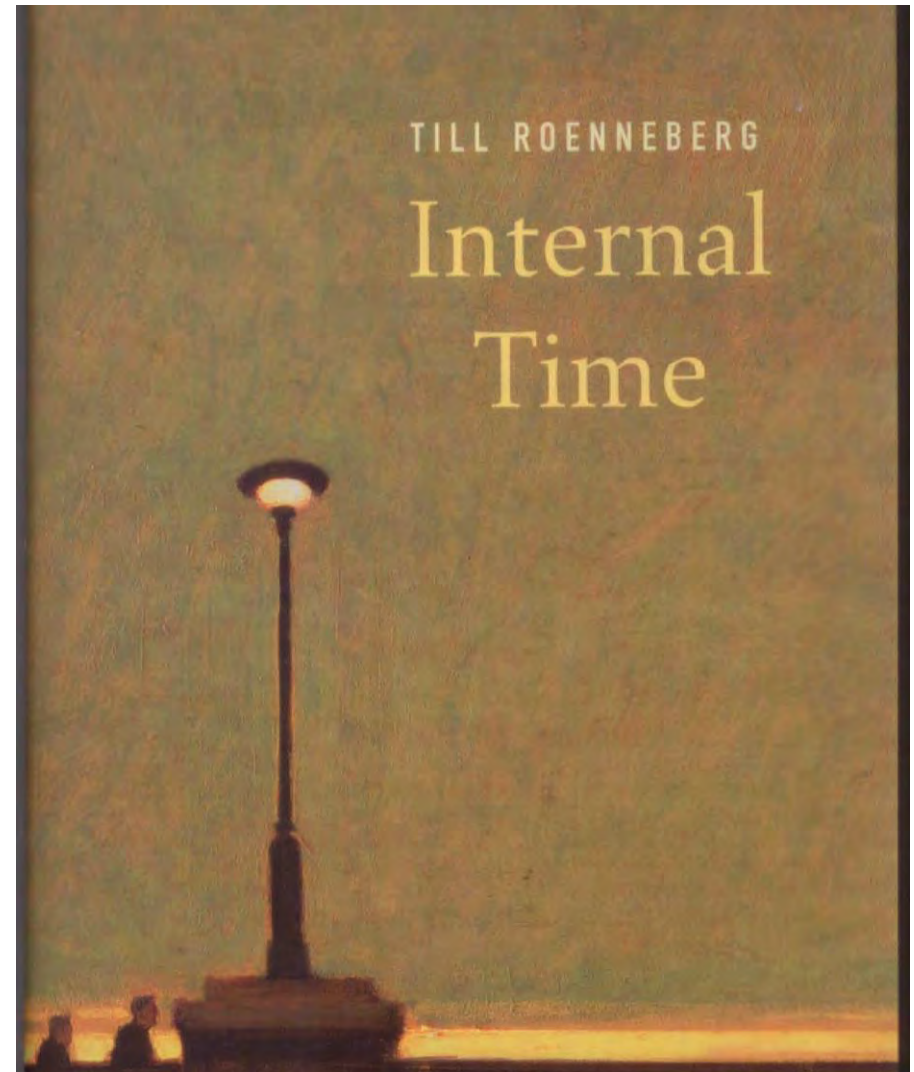
The 24-hour light-dark cycle is the primary environmental time cue that entrains the circadian system

we have adapted (almost) to live on a 24-hour planet (actually humans have 24.2 hr cycle)_

Characteristics of a functioning clock

Till Roenneberg 'Internal Time' 2012

- 1. Our body's internal day is controlled by its own biological clock;
- 2. Since the biological clock is not 24 hours in length it must be periodically re-set to match the external world;
- 3. The biological clock varies from individual to individual (AND BY DISEASE STATE)!;
- 4. We feel best "WELLBEING" when all of our bodily functions oscillate in synchrony.



Manipulating the sleep-wake cycle and circadian rhythms to improve clinical management of major depression

Ian B Hickie^{1*}, Sharon L Naismith¹, Rébecca Robillard¹, Elizabeth M Scott^{1,2} and Daniel F Hermens¹

Abstract

Background: Clinical psychiatry has always been limited by the lack of objective tests to substantiate diagnoses and a lack of specific treatments that target underlying pathophysiology. One area in which these twin failures has been most frustrating is major depression. Due to very considerable progress in the basic and clinical neurosciences of sleep-wake cycles and underlying circadian systems this situation is now rapidly changing.

Discussion: The development of specific behavioral or pharmacological strategies that target these basic regulatory systems is driving renewed clinical interest. Here, we explore the extent to which objective tests of sleep-wake cycles and circadian function - namely, those that measure timing or synchrony of circadian-dependent physiology as well as daytime activity and nighttime sleep patterns - can be used to identify a sub-class of patients with major depression who have disturbed circadian profiles.

Staying well during intern year!



Effects of Sleep, Physical Activity, and Shift Work on Daily Mood: a Prospective Mobile Monitoring Study of Medical Interns

David A. Kalmbach, PhD¹, Yu Fang, MSE², J. Todd Amedt, PhD¹, Amy L. Cochran, PhD³, Patricia J. Deldin, PhD¹, Adam I. Kaplin, MD PhD⁴, and Srijan Sen, MD PhD^{1,2}

¹Department of Psychiatry, University of Michigan Medical School, Ann Arbor, MI, USA; ²Molecular and Behavioral Neuroscience Institute, University of Michigan, Ann Arbor, MI, USA; ³Department of Mathematics, University of Michigan, Ann Arbor, MI, USA; ⁴Departments of Psychiatry and Neurology, Johns Hopkins University School of Medicine, Baltimore, MD, USA.

BACKGROUND: Although short sleep, shift work, and physical inactivity are endemic to residency, a lack of objective, real-time information has limited our understanding of how these problems impact physician mental health.

OBJECTIVE: To understand how the residency experience affects sleep, physical activity, and mood, and to under-

J Gen Intern Med
DOI: 10.1007/s11606-018-4373-2
© Society of General Internal Medicine 2018

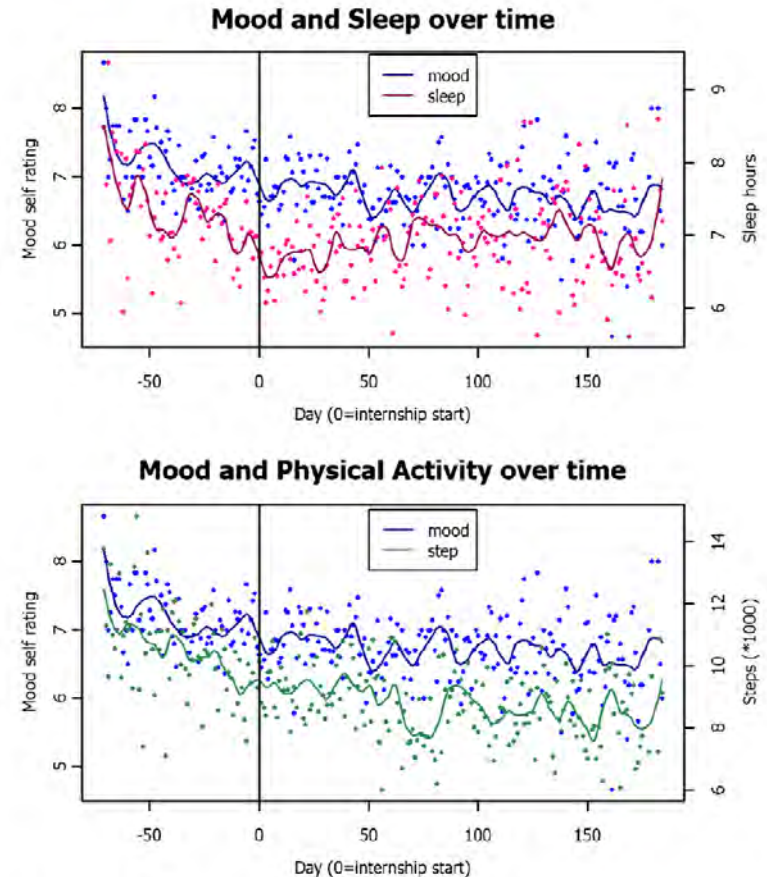


Figure 1 The relationship between mood and sleep, and mood and physical activity through internship.

Headspace: a national development of regional service partnerships

HEADSPACE

MACARTHUR / CAMPBELLTOWN / S. HIGHLANDS

May 18th, 2007

Lead Agency:
***Brain & Mind
Research
Institute***

Management
Committee:
***Ian Hickie
Rene Pennock
Wesley Noffs
Paul Haber
Kelly Walker
Victor Stormi/
Angelo Virgona
Gary Flynn
Project Staff***



Community of Youth Services Newsletter #1

3. Implementing the Framework within enhanced primary-care based 'headspace' services

headspace centres

headspace has centres located throughout australia, ready to help

find your local headspace centre

enter your postcode

do you have a question?

need help asap?

kids help line
1800 55 1800
www.kidshelpline.com.au

lifeline australia
13 11 14
www.lifeline.org.au

\$40m Co-operative Research Centre for Young People, Technology and Wellbeing

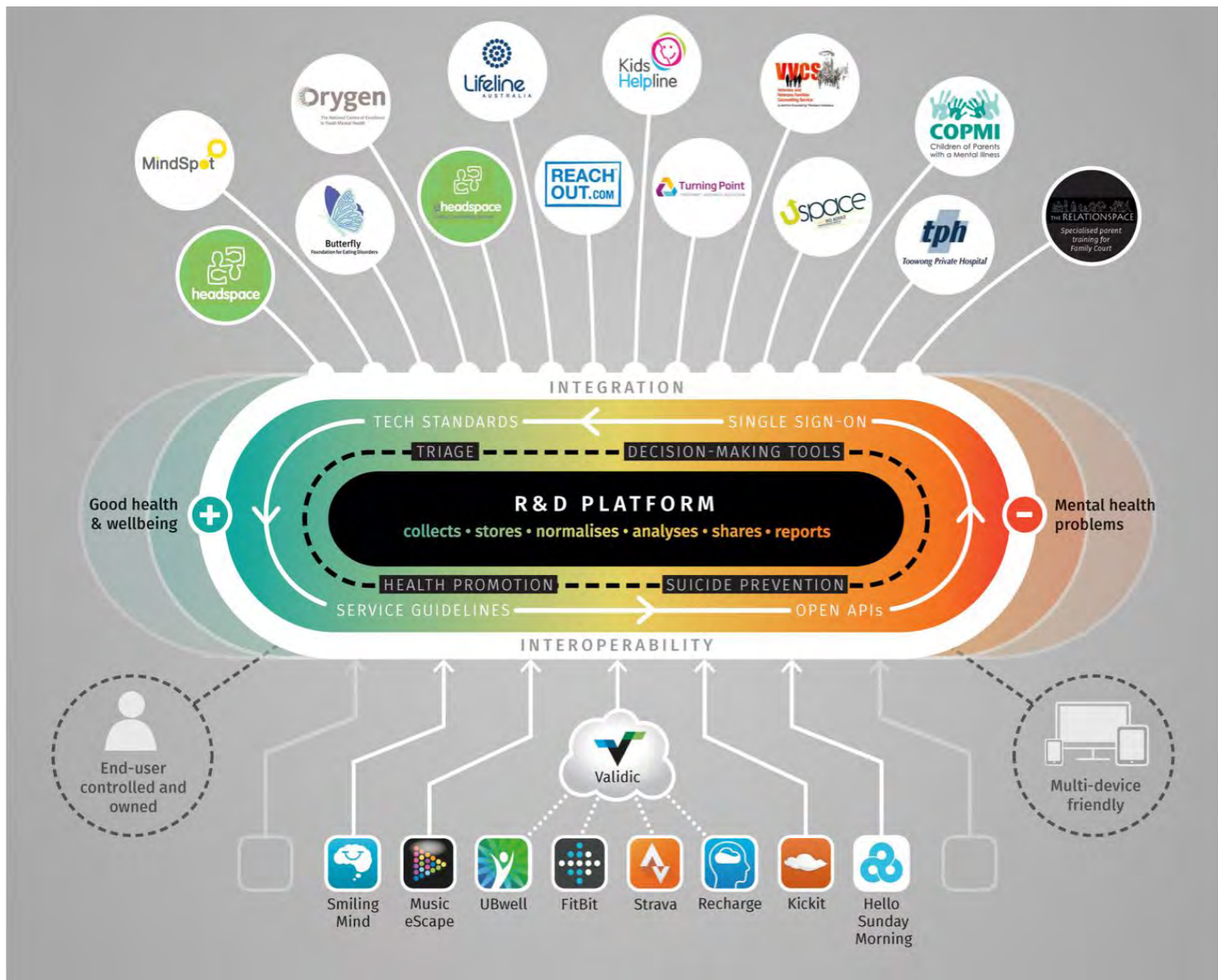


Associate Professor Jane Burns
CEO, Young and Well Cooperative Research Centre

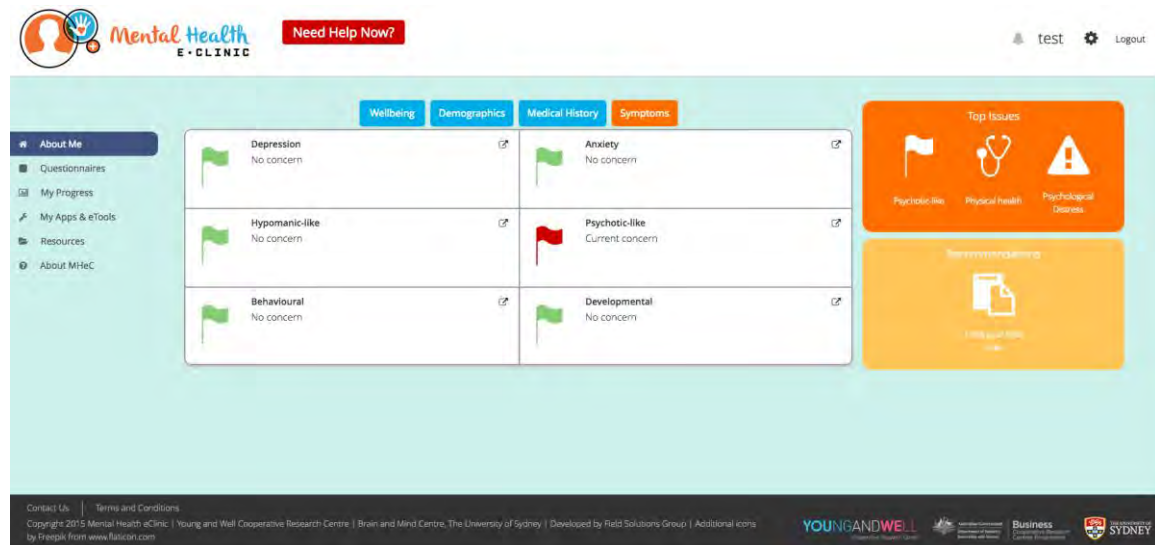
1. Focusing on growing mental wealth!!



RIGHT CARE, RIGHT PLACE, FIRST TIME, EVERY TIME



Mental Health eClinic: example dashboard of results



Share plan (decision tool) wireframe - clinical support

The wireframe shows a user interface for a 'Share Plan' decision tool. At the top, there is a teal header bar with the 'synergy' logo on the left. In the center of the header is the text 'Need immediate support?' followed by three buttons: 'Services' (with a magnifying glass icon), 'Talk' (with a speech bubble icon), and 'Help!' (with an exclamation mark icon). On the right side of the header, there is a user profile section showing a person icon and the name 'Sam White', along with a notification bell icon with the number '3' and a settings gear icon.

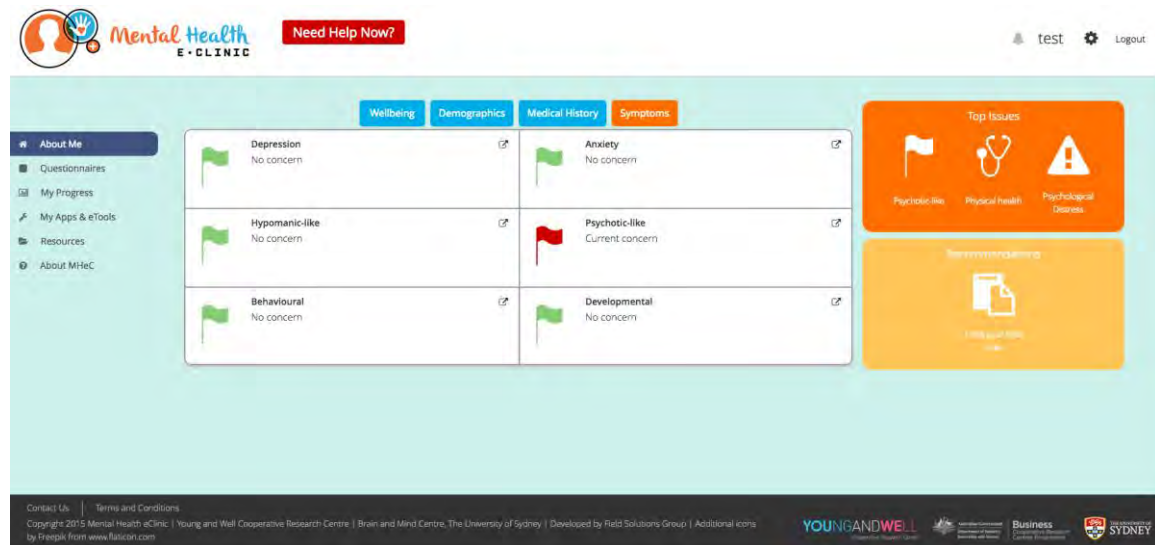
Below the header, the main content area is titled 'Share Plan' with a hamburger menu icon to its left. It features three vertical panels, each representing a different health topic: 'Sleep' (red icon), 'Smoking' (red icon with a cigarette), and 'Anxiety' (yellow icon with a person). Each panel has a tabbed interface with 'Online Support' and 'Clinical Support' tabs. A black circle highlights the 'Clinical Support' tab in the 'Sleep' panel, with a mouse cursor pointing at it. The 'Sleep' panel's 'Clinical Support' tab is currently selected, displaying a large teal box with the text 'Complete with your clinician'. The 'Smoking' and 'Anxiety' panels show lists of resources under 'Apps', 'E-tools', and 'Assessments'. For example, the 'Smoking' panel lists 'kickit 2' and 'QuitNow!', while the 'Anxiety' panel lists 'UBwell Health & Wellbeing Tracker' and a 'Survey complete in 2 mins'.

At the bottom of the main content area, there is a 'KEY:' section with three color-coded boxes: red for 'High', yellow for 'Risk', and green for 'Normal'.

On the right side of the interface, there is a dark grey sidebar with a plus icon and the text 'Drag & Drop items you want to add to your Share Plan'. Below this, there is a list of health topics with corresponding icons: Smoking, Sleep, Physical Health, Anxiety, Cognition, Social Involvement, Social and Economic Participation, Self harm/Suicide, and Drugs/Alcohol.

The footer of the page contains a dark grey bar with links for 'Contact Us', 'About Us', 'Terms and Conditions', and 'Accessibility Mode'. On the right side of the footer, there are logos for 'YOUNGANDWELL', the 'Australian Government Department of Health and Services', 'Business' (with a logo for 'Cooperating Research Centres'), and 'THE UNIVERSITY OF SYDNEY'.

Mental Health eClinic: example dashboard of results



Share plan (decision tool) wireframe - clinical support

The wireframe shows a user interface for a 'Share Plan' clinical support tool. At the top, there is a teal header bar with the 'synergy' logo on the left, a 'Need immediate support?' section with 'Services', 'Talk', and 'Help!' buttons in the center, and a user profile 'Sam White' with a notification bell icon on the right. Below the header, the main content area is titled 'Share Plan' with a hamburger menu icon on the left. It features three vertical panels for 'Sleep', 'Smoking', and 'Anxiety'. Each panel has a color-coded header (red for Sleep and Smoking, yellow for Anxiety) and a toggle for 'Online Support' and 'Clinical Support'. The 'Sleep' panel is highlighted with a red border and a circular callout around the 'Clinical Support' toggle, with a mouse cursor pointing at it. The 'Smoking' and 'Anxiety' panels show various resources like 'Apps' (kickit 2, QuitNow!), 'E-tools' (REACH OUT.COM), and 'Assessments' (Survey complete in 2 mins). A legend at the bottom indicates 'KEY: High (red), Risk (yellow), Normal (green)'. On the right side, there is a vertical sidebar titled 'Drag & Drop items you want to add to your Share Plan' with icons for Smoking, Sleep, Physical Health, Anxiety, Cognition, Social Involvement, Social and Economic Participation, Self harm/Suicide, and Drugs/Alcohol. The footer contains contact information, copyright notice, and logos for Young and Well, the Australian Government, and the University of Sydney.

synergy

Need immediate support?

Services Talk Help!

Sam White

Share Plan

Sleep

Online Support Clinical Support

Complete with your clinician

Smoking

Online Support Clinical Support

Apps

kickit 2
Quit Smoking, Incentivized...

QuitNow!
Reminds you why you want to quit...

E-tools

Assessments

Anxiety

Online Support Clinical Support

Apps

UBwell Health & Wellbeing Tracker

E-tools

REACH OUT.COM

Assessments

Survey complete in 2 mins

KEY: High Risk Normal

Drag & Drop items you want to add to your Share Plan

- Smoking
- Sleep
- Physical Health
- Anxiety
- Cognition
- Social Involvement
- Social and Economic Participation
- Self harm/Suicide
- Drugs/Alcohol

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Conclusions

- **Growing mental wealth is an institution-level responsibility in the 21st C.**
- **Mental Health Promotion, Prevention and early intervention are all out there!**
- **Does your institution have a serious, sustained plan**
 - **if not, why not?**
- **Using partnership approaches not paternalism**
- **MAKING USE OF NEW SCIENCES – INDIVIDUALISED APPROACHES TO DEVELOPMENT**
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