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 LEAVNG

6. Genuine Commitments to effective care
  - accessible and high quality early intervention

UK Govt Office for Science 2008

NATURE Vol 455 | 23 October 2008 nature

FEATURE

The mental wealth of nations

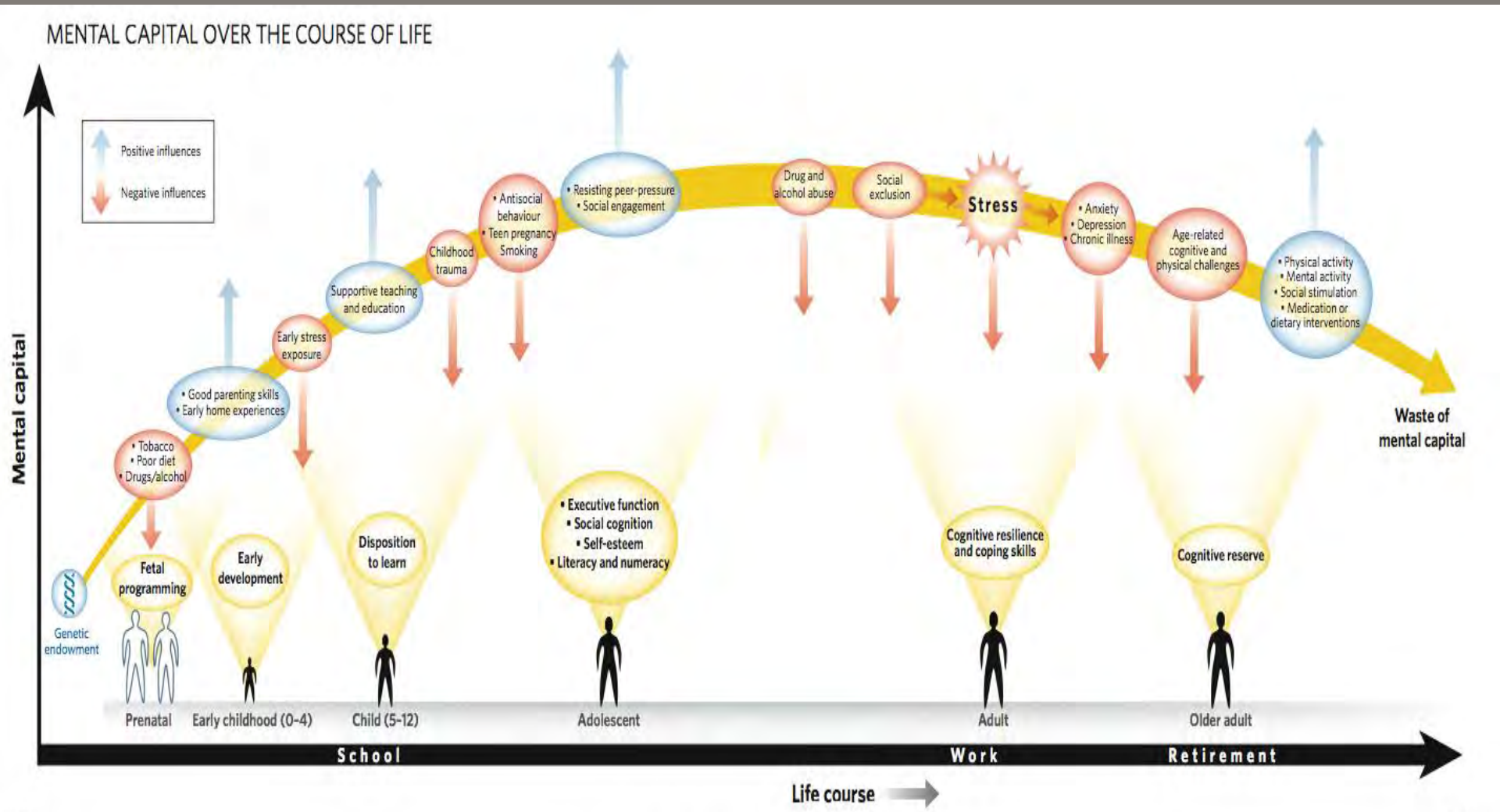
Countries must learn how to capitalize on their citizens' cognitive resources if they are to prosper, both economically and socially. Early interventions will be key.

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

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.

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-

Building mental Capital across the Life Cycle



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??

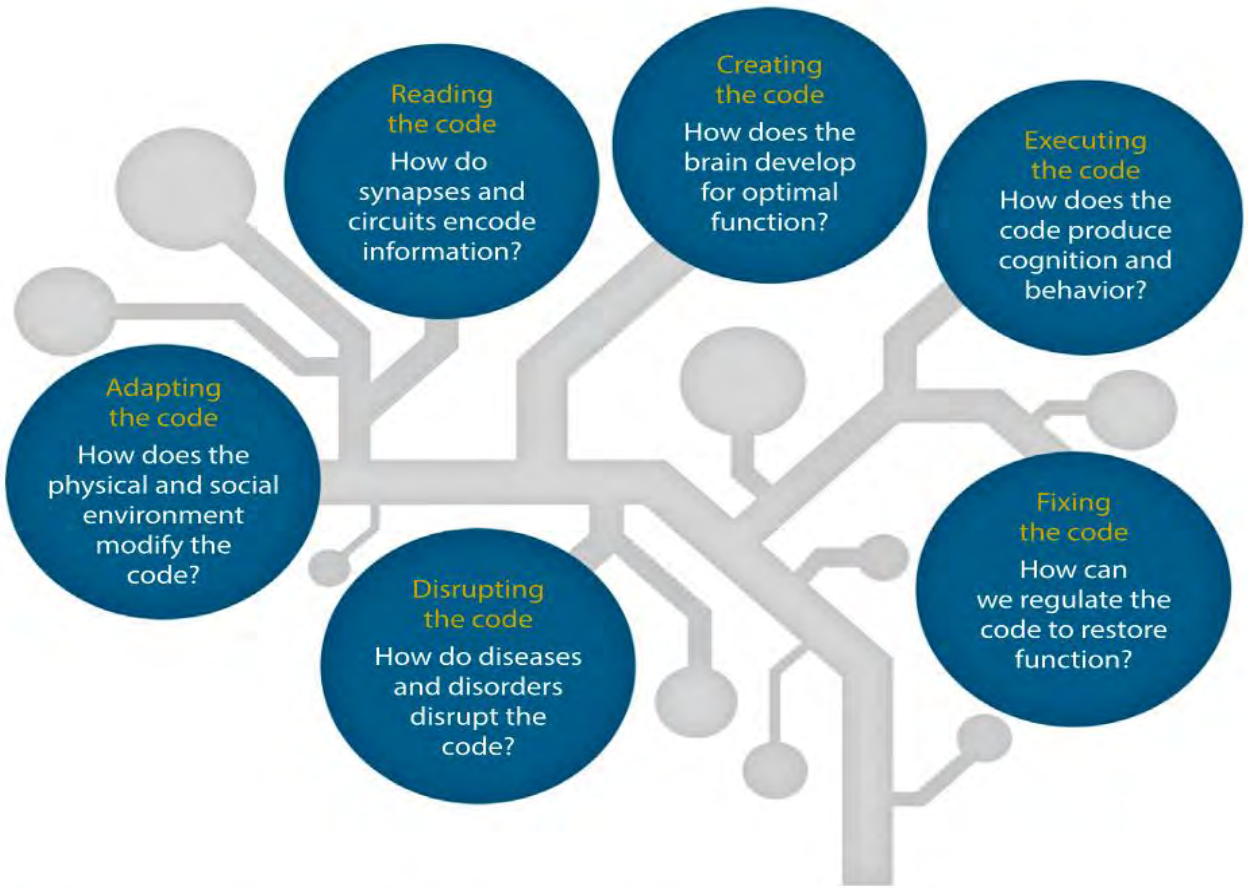
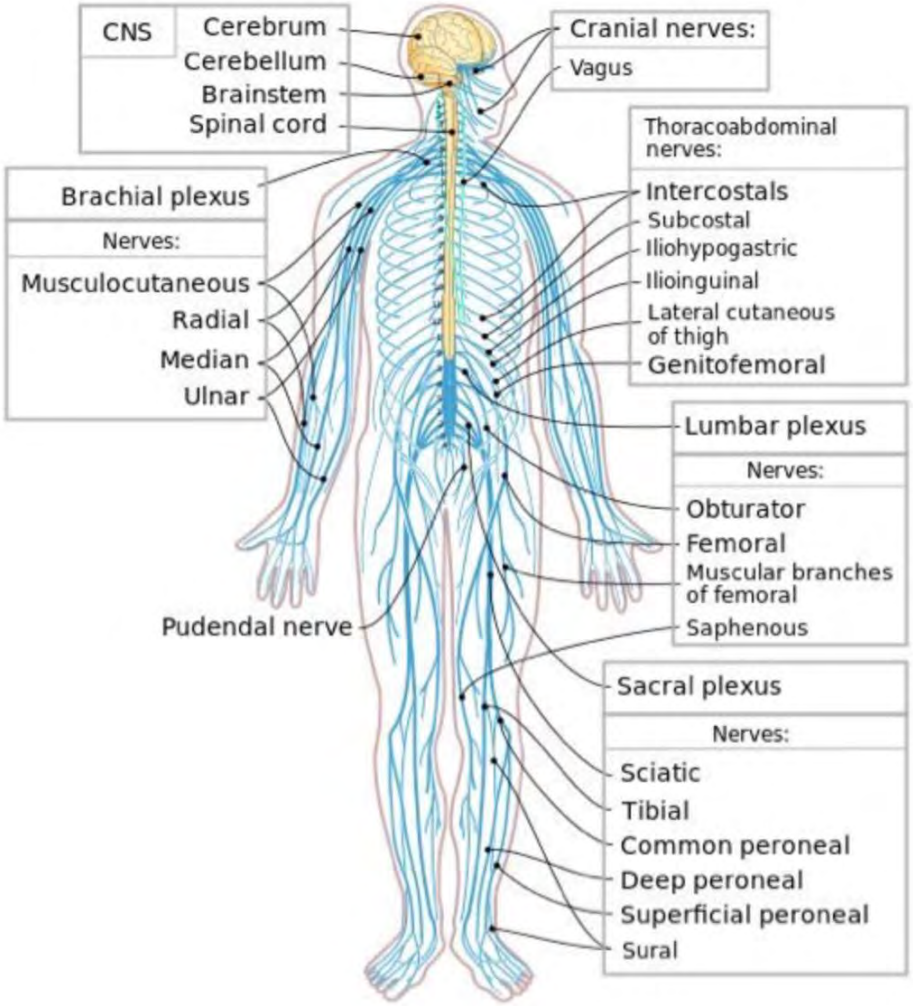
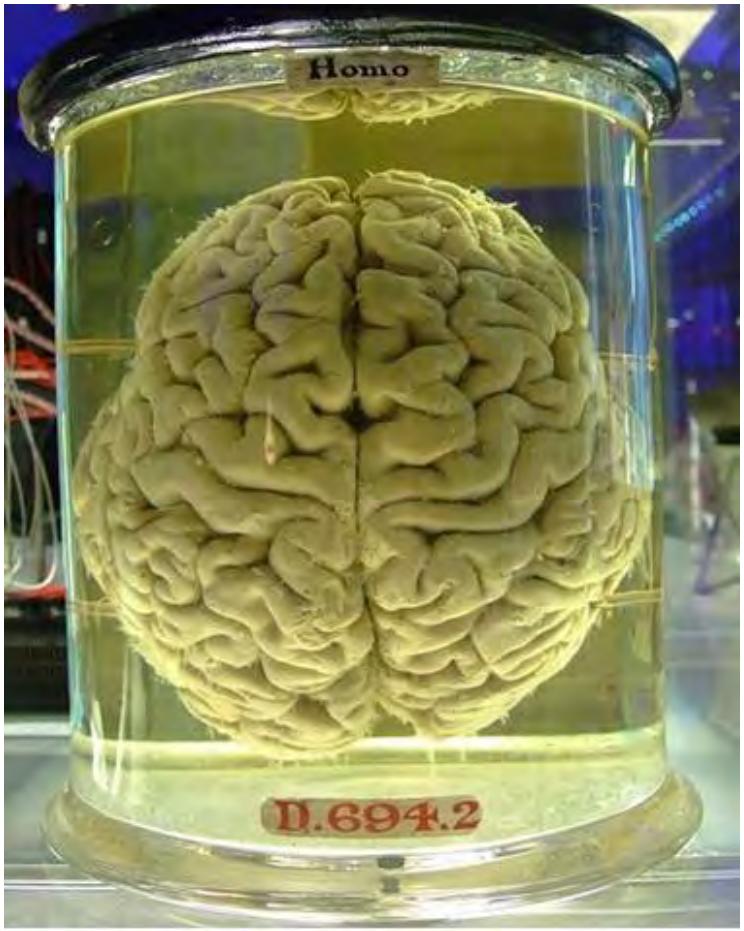


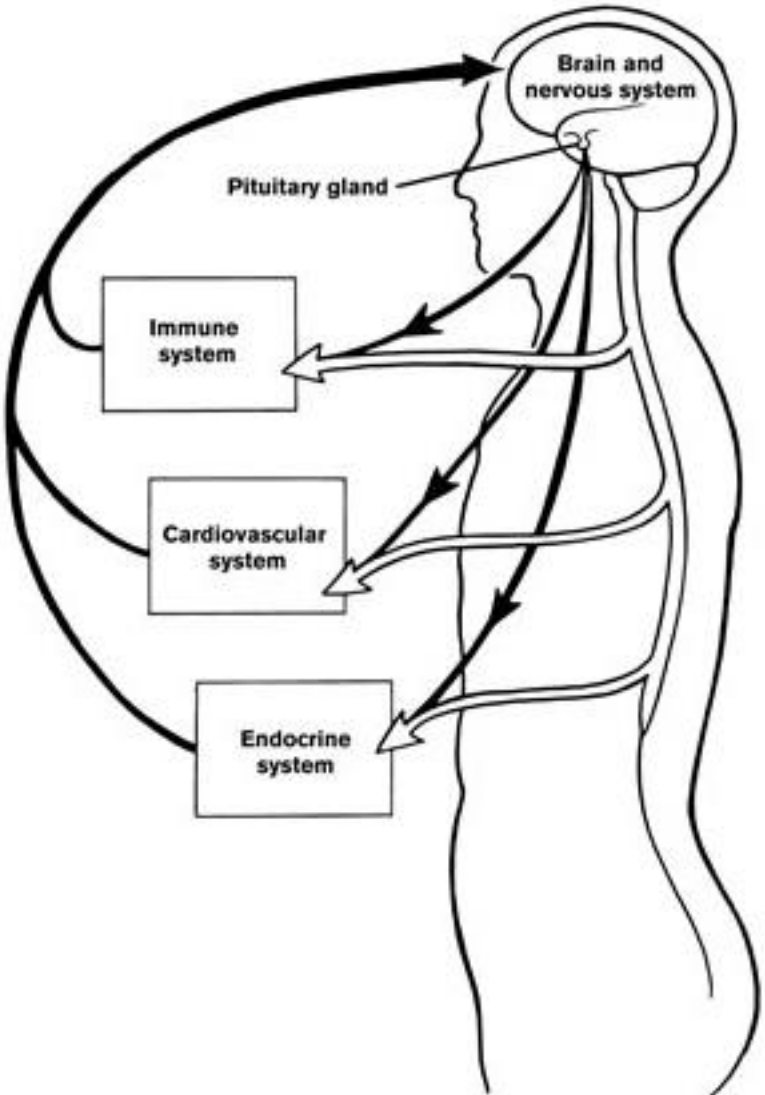
Figure 1. Cracking the Brain's Code

Human Nervous System – Monitoring the environment

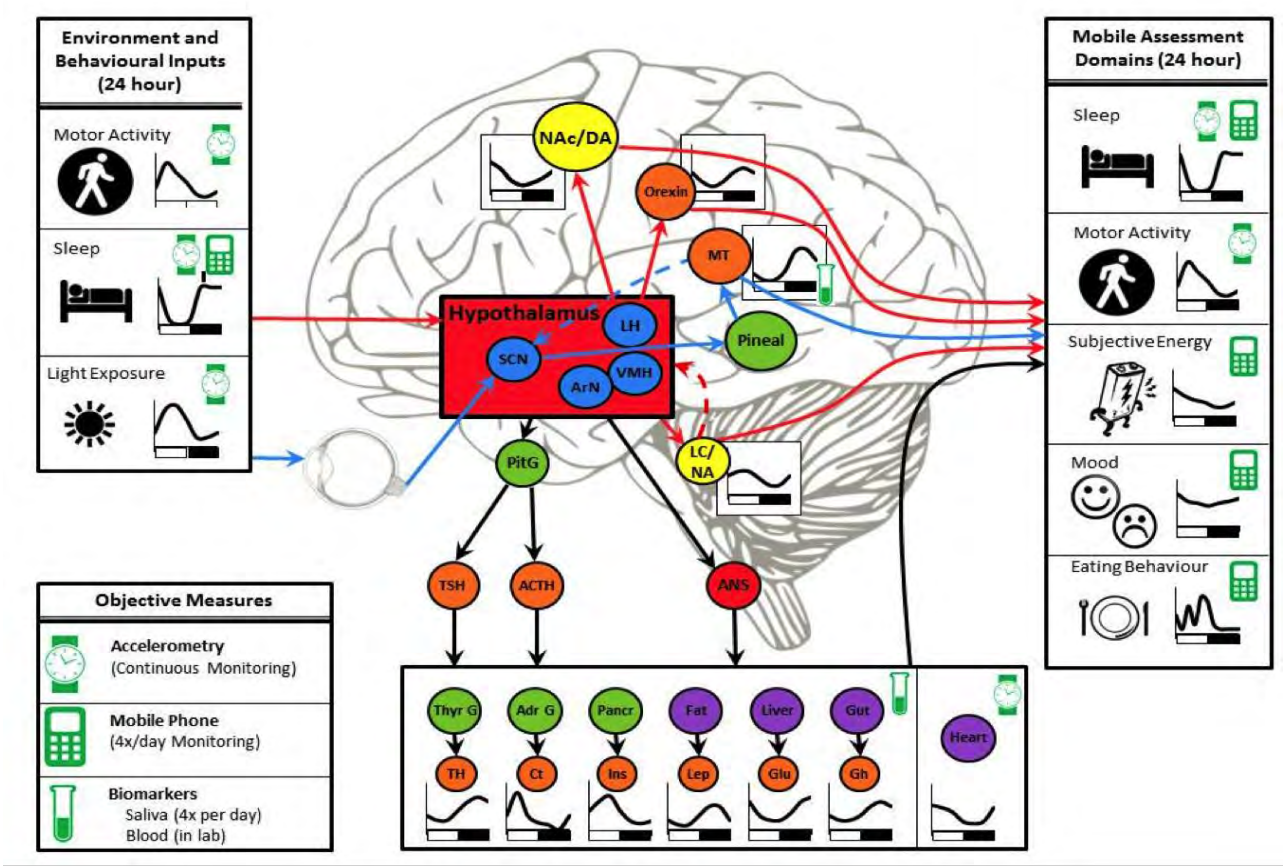


Brain and Body interactions

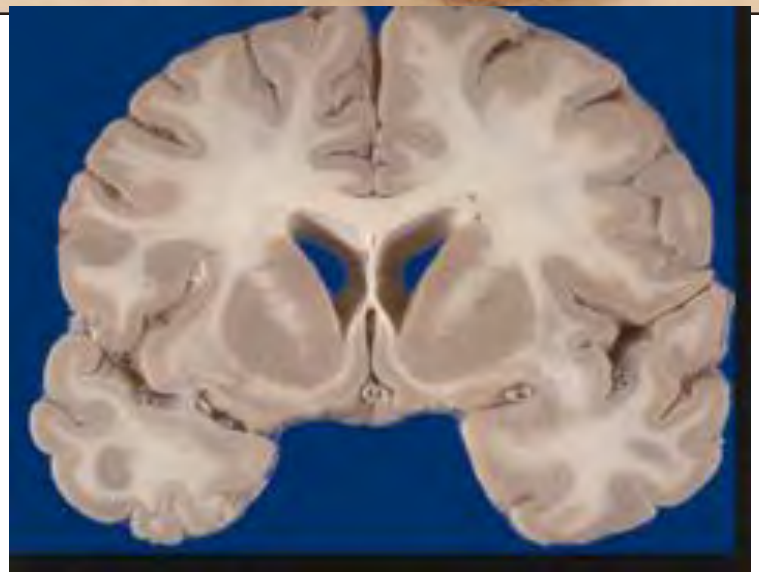




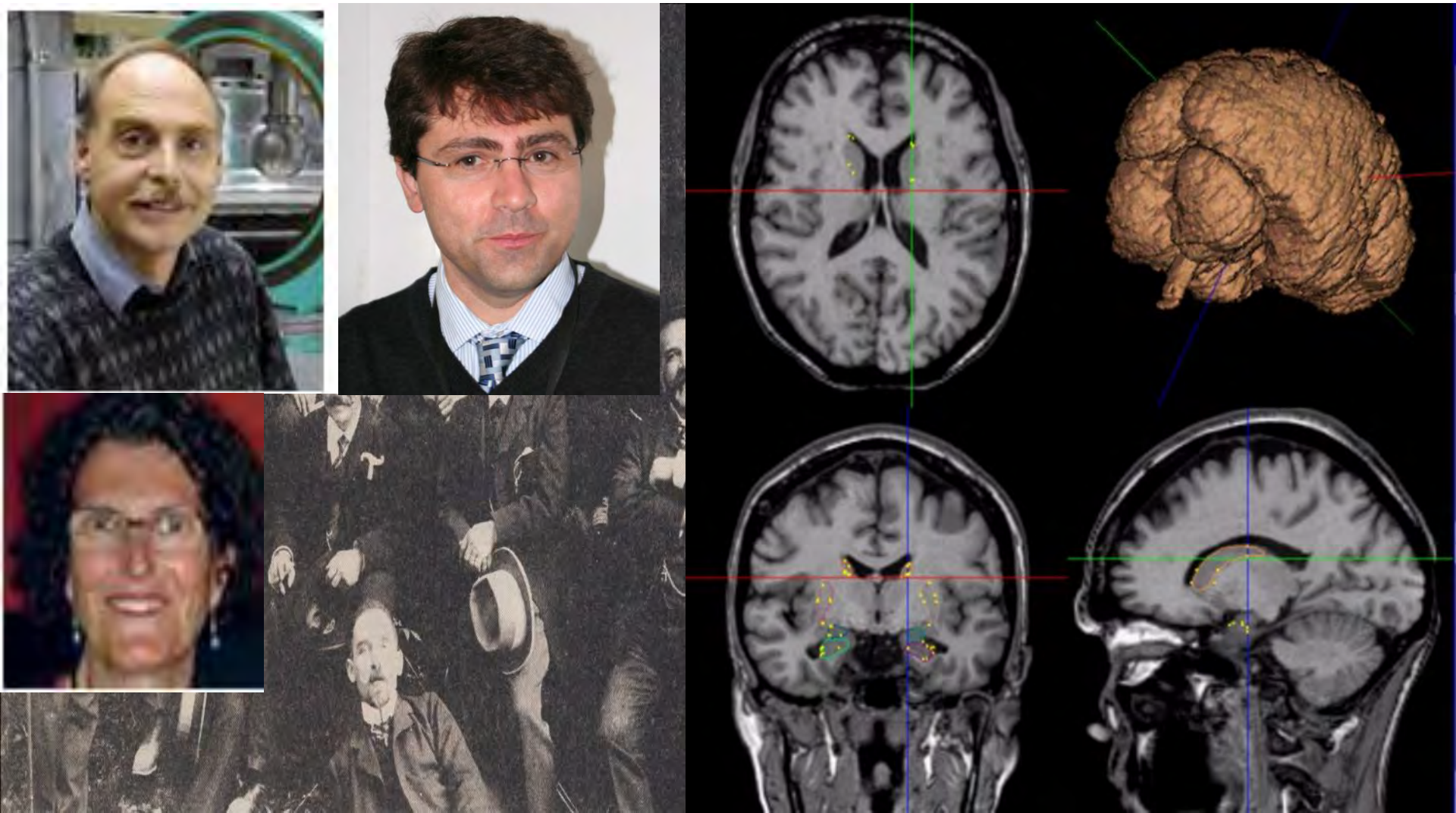
Environmental processes associated with regulation of Circadian system



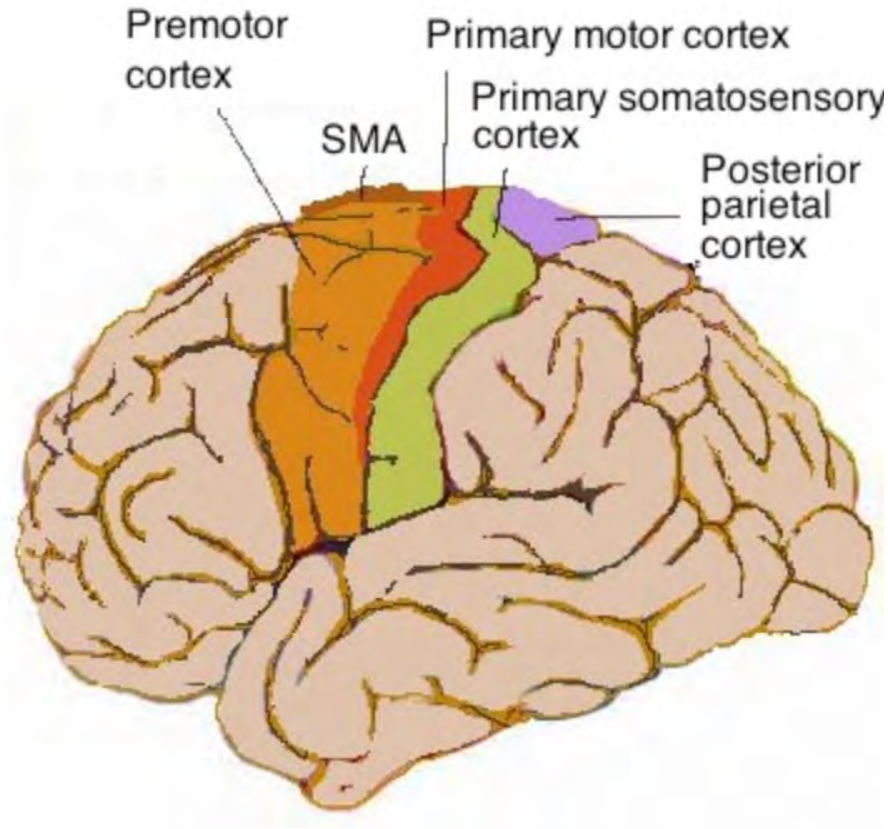
Changing Brain Sciences by changing the view

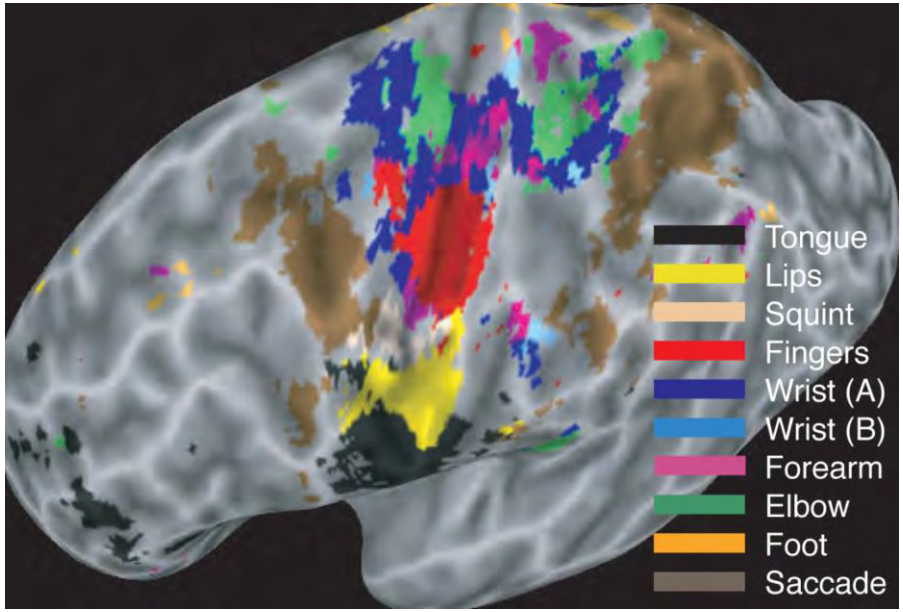


Structural brain change: 100 years apart
Establishing high-quality neuroimaging platforms

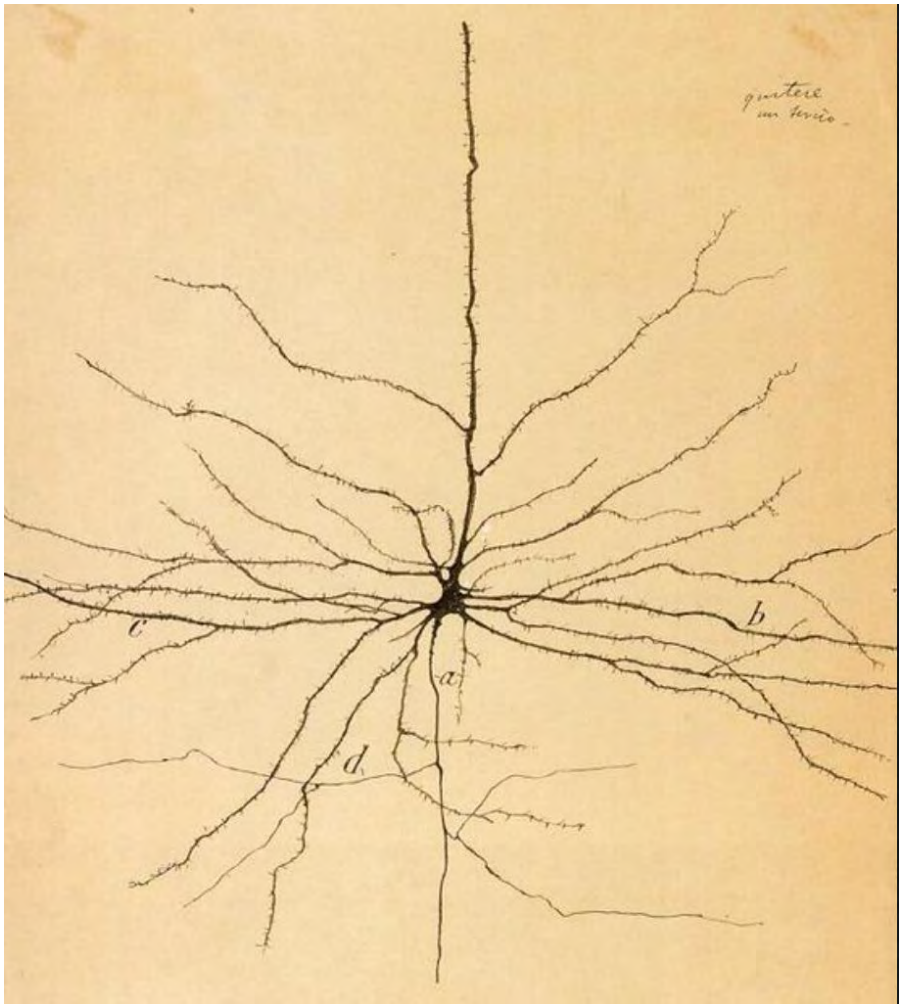


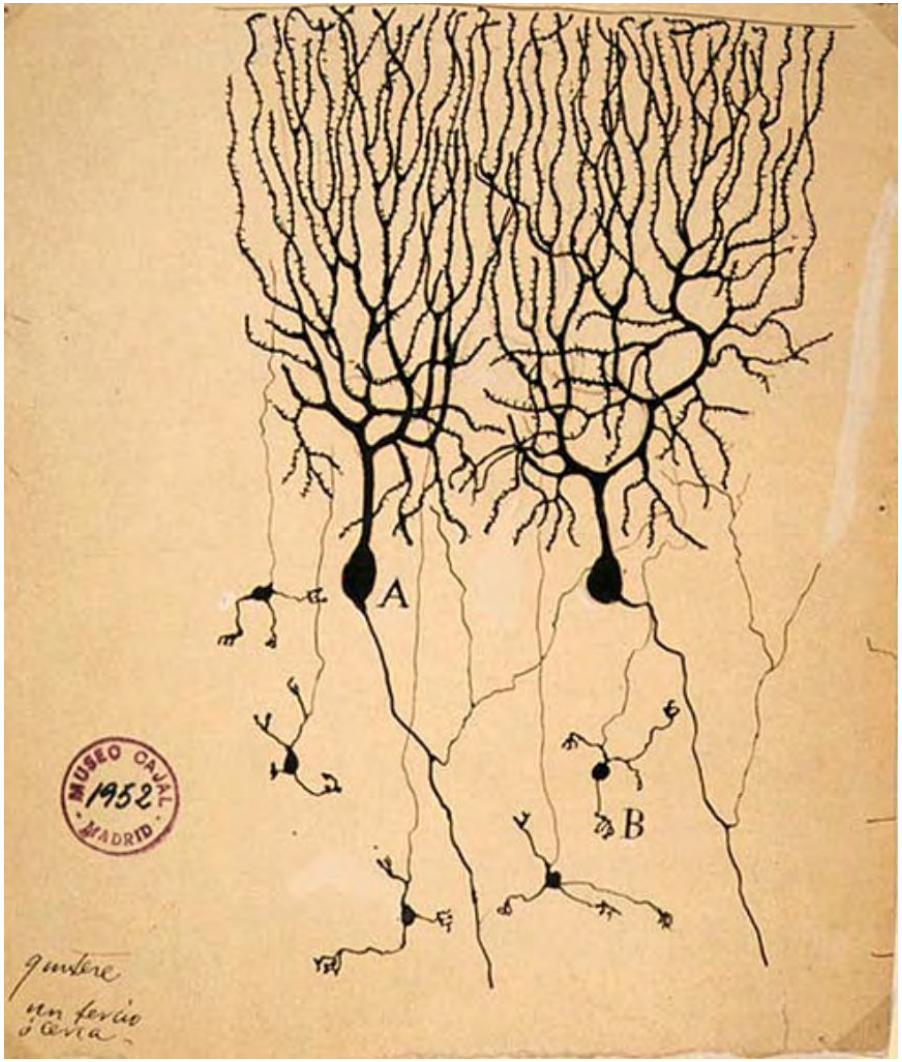
Human Motor Cortex



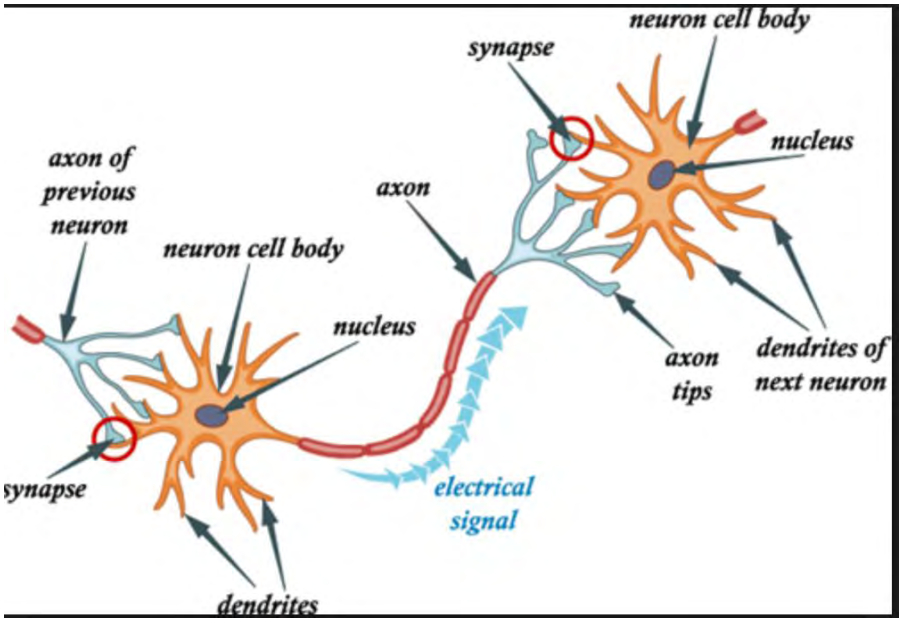


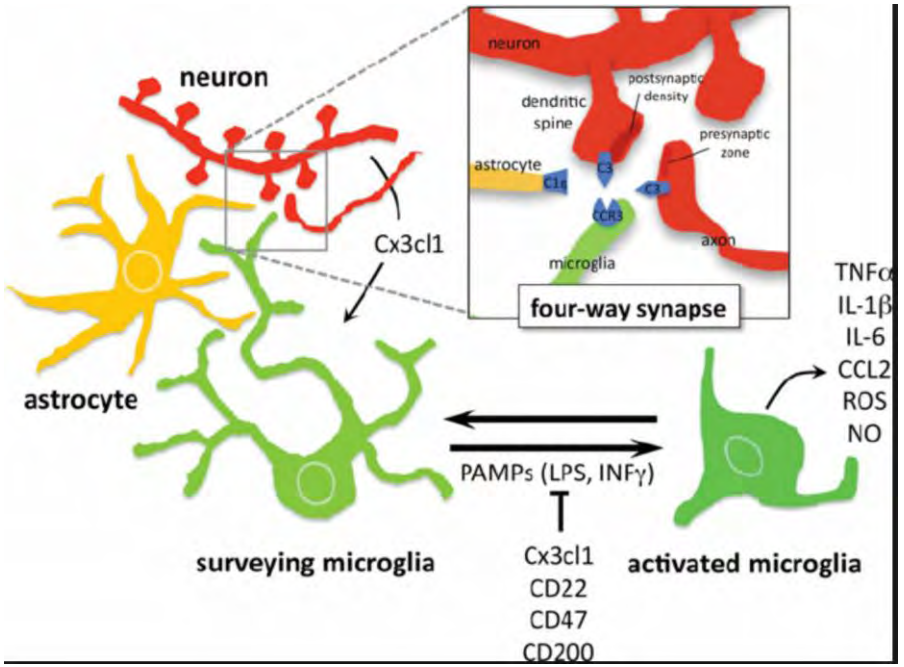
Cajal's key drawings – early 1900's



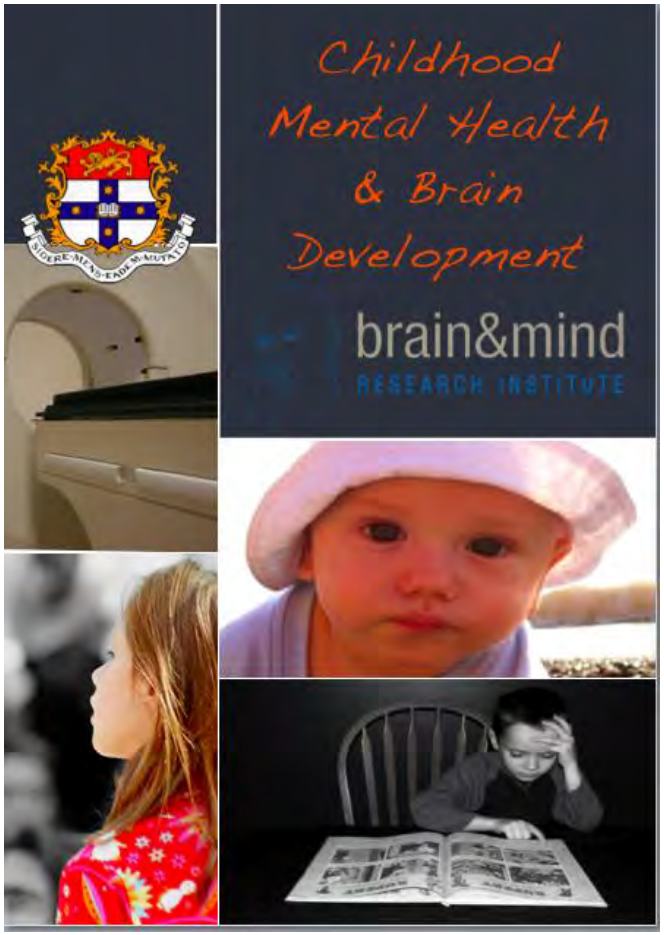


Cellular Transmission – increasing Complexity





Brain Development in Childhood and Adolescence



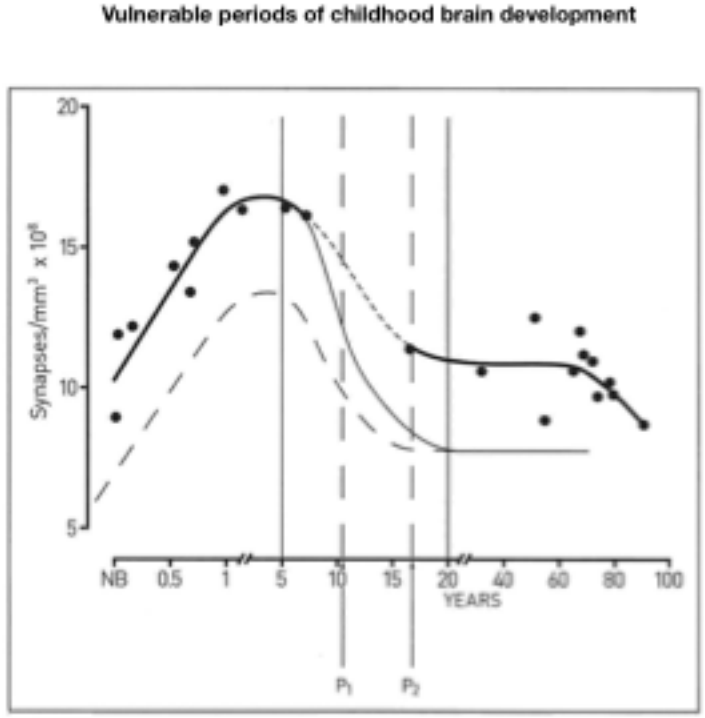
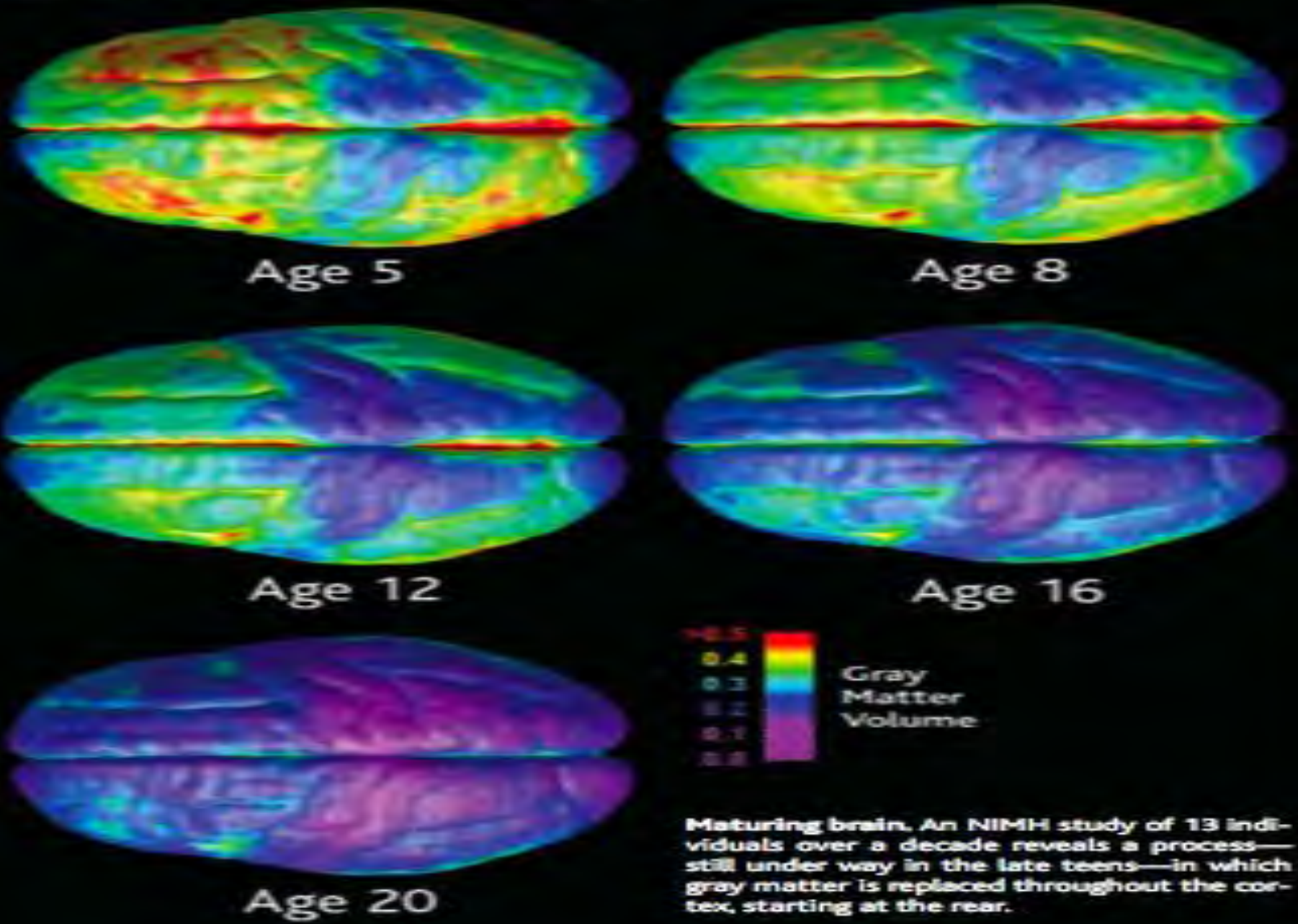


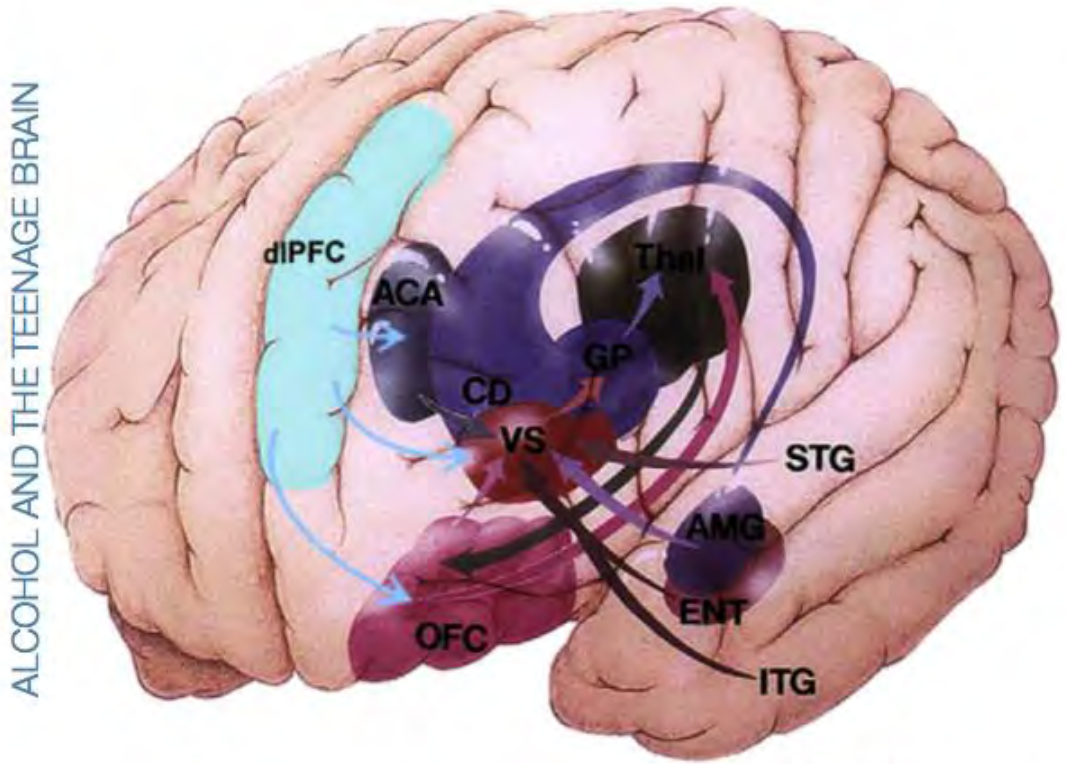
Figure 2: Synapses form most rapidly in the brain during childhood (0-10 years), as this graph shows. During adolescence there is a decline in synapses. The adolescent period is one during which psychoses occur such as schizophrenia. The childhood period is one of vulnerability to diseases such as Autism 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



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 Processs



Adapted from Salloway S et al.

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

Developing brain connections

NeuroImage 64 (2013) 671–684

Contents lists available at SciVerse ScienceDirect

NeuroImage

journal homepage: www.elsevier.com/locate/ynimg

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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ARTICLE INFO

Article history:
Accepted 3 September 2012
Available online 14 September 2012

Keywords:
HARDI
Structural connectivity
Graph theory
Development

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.

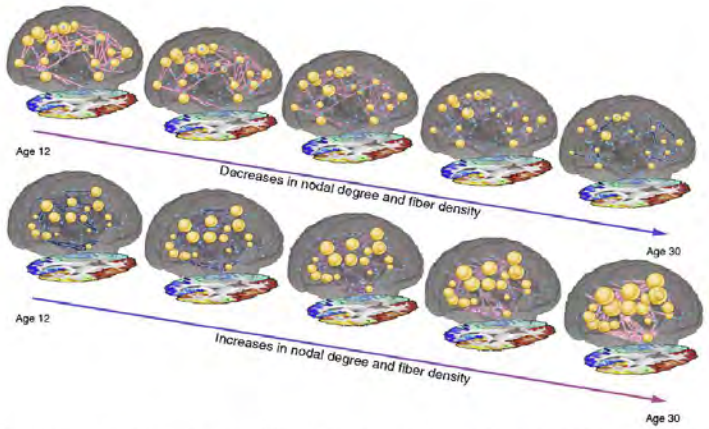
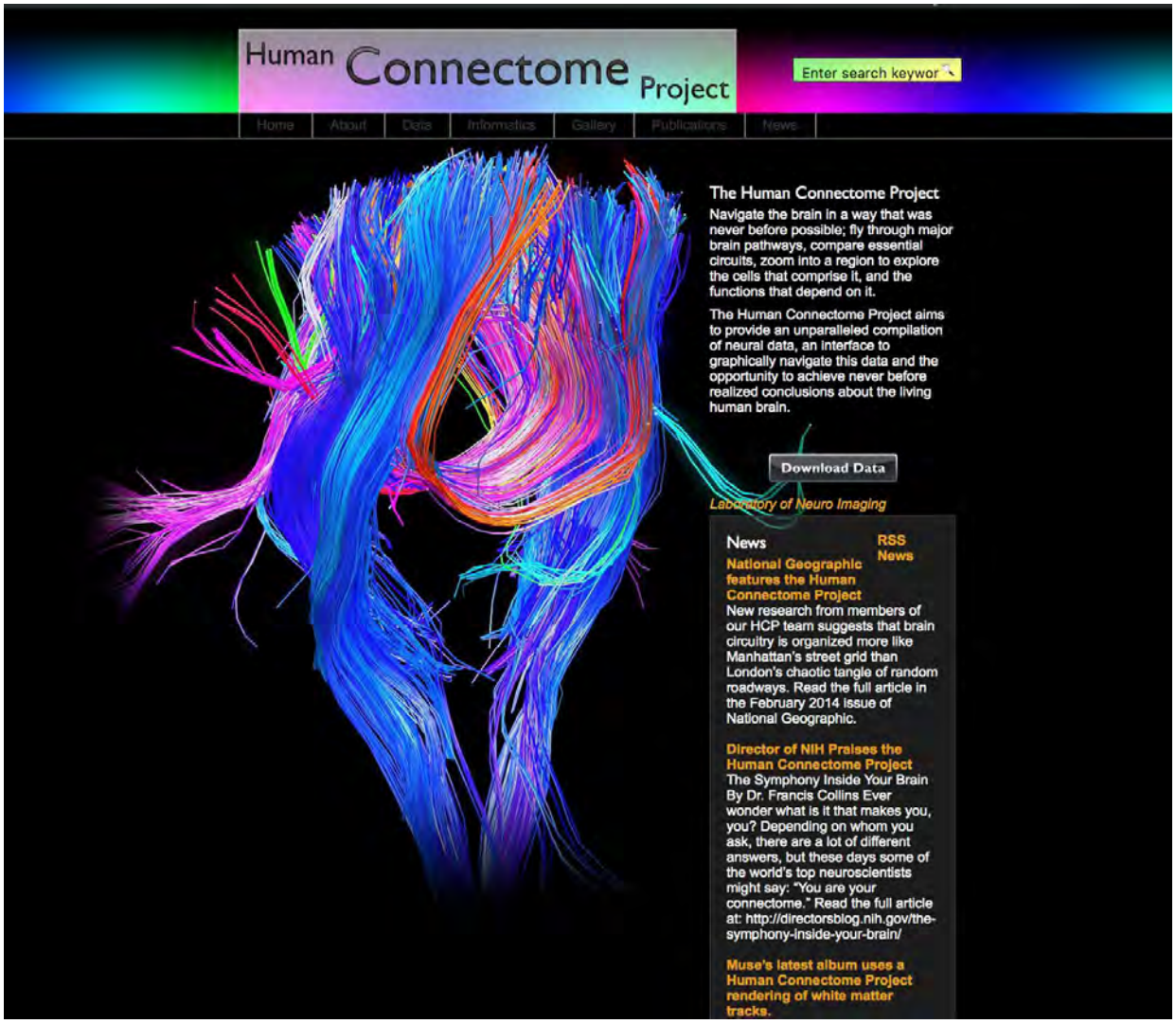


Fig. 3. Still images from Supplementary Video 1 and Supplementary Video 2 displaying the increases and decreases in degree and fiber density between age 12 and age 30. While we lack scan data for some parts of this age range, we used the regression coefficients from our analysis to estimate network metrics 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.

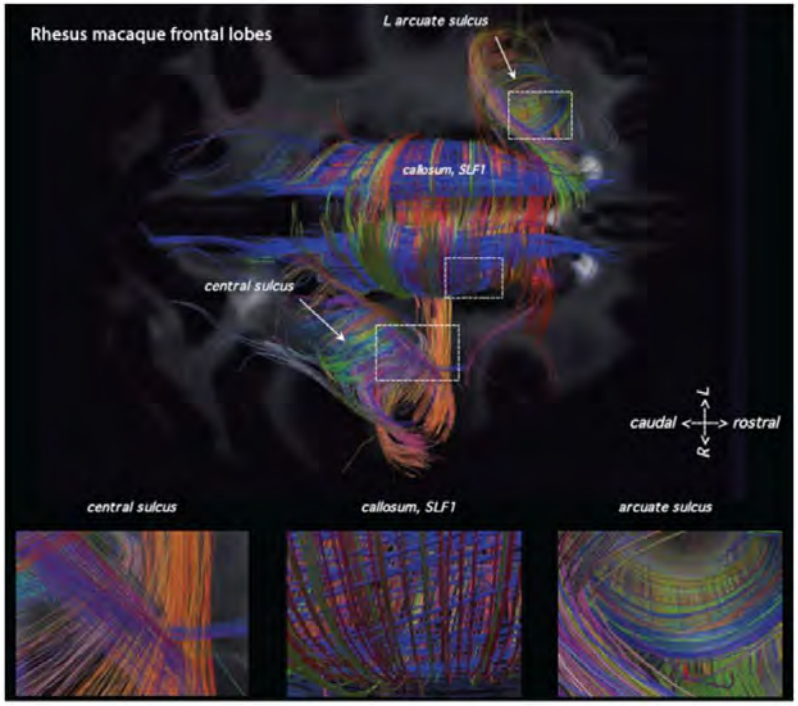
Brain Connections in the 21st C (??new insights)



More information = More insight??

The brain is full of Manhattan-like grids

POSTED THU, 03/29/2012

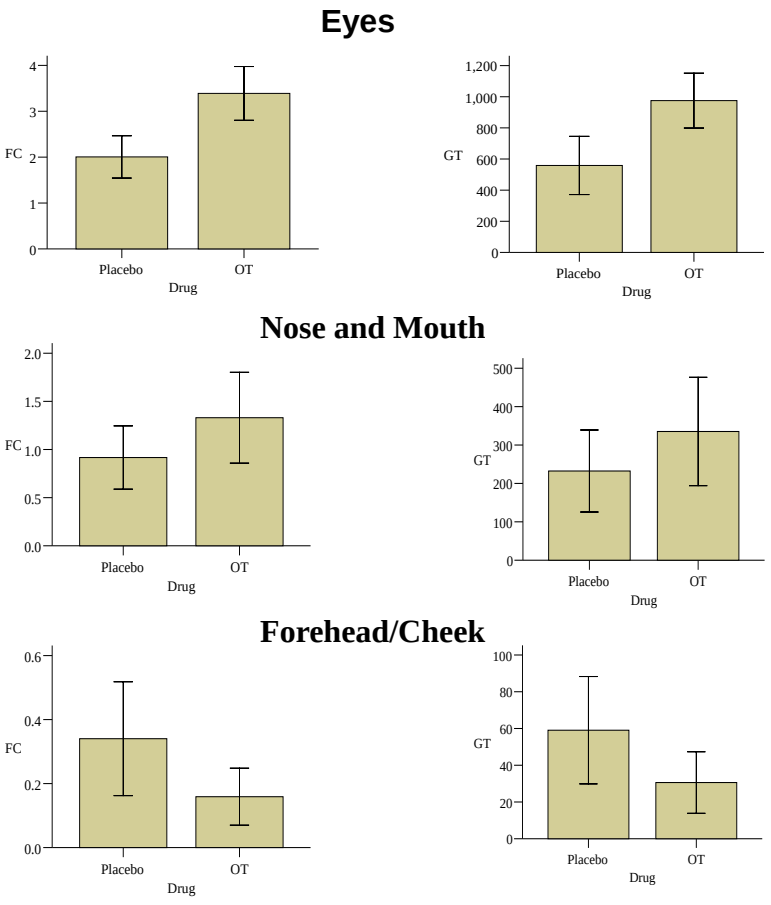


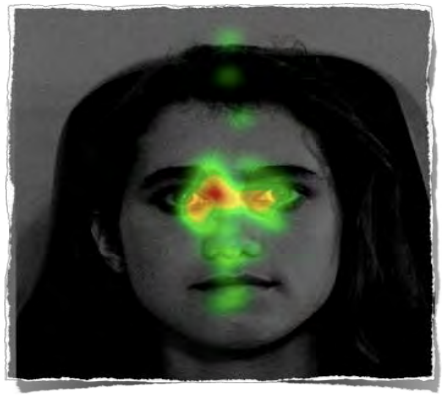
London's streets are a mess. Roads bend sharply, end abruptly, and meet each other at unlikely angles. Intuitively, you might think that the cells of our brain are arranged in a similarly haphazard pattern, forming connections in random places

DEVELOPING SOCIAL COGNITION

48 Males assigned to OT or placebo nasal spray

Post-Drug: Presented with 24 neutral human faces

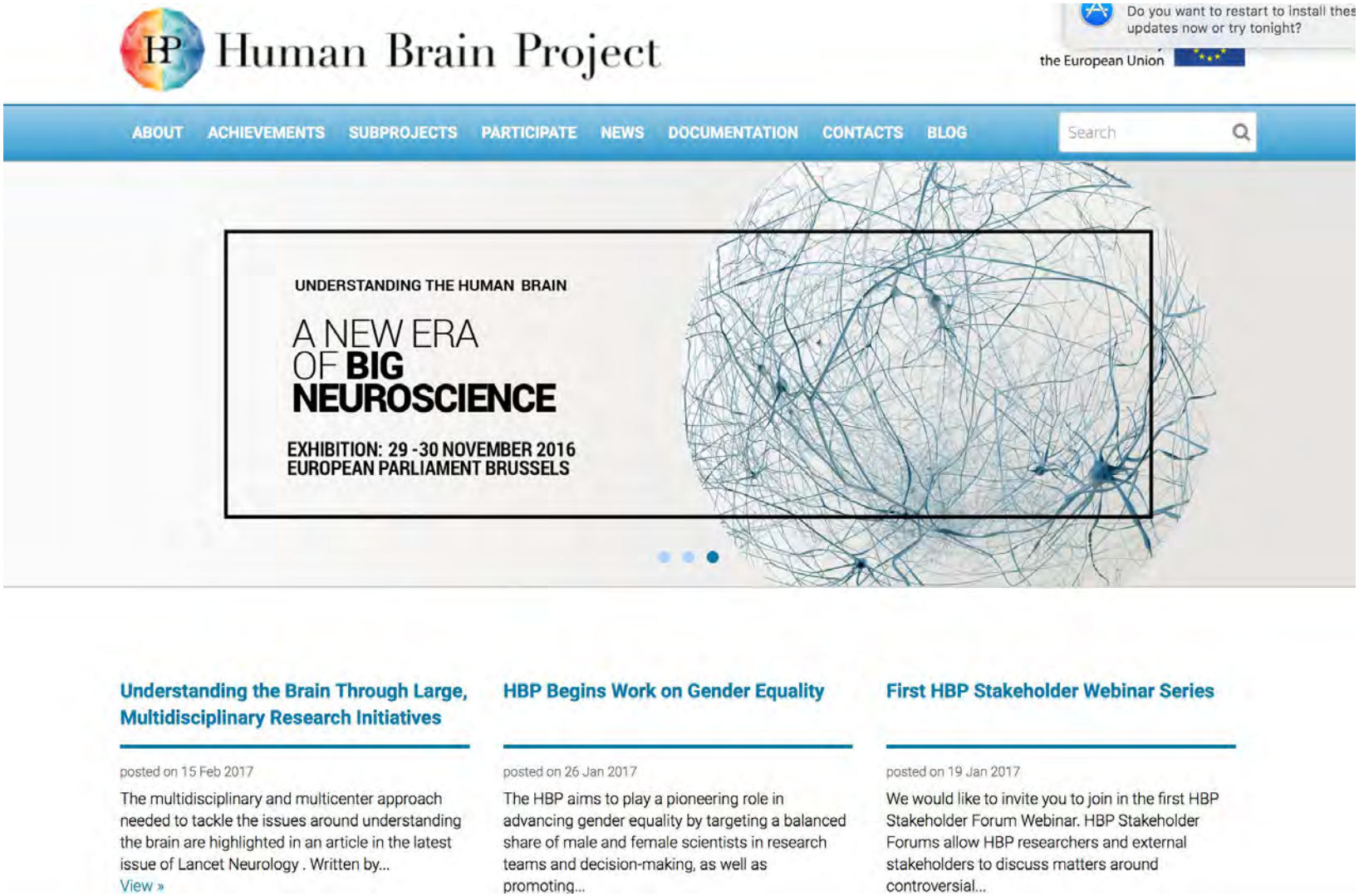




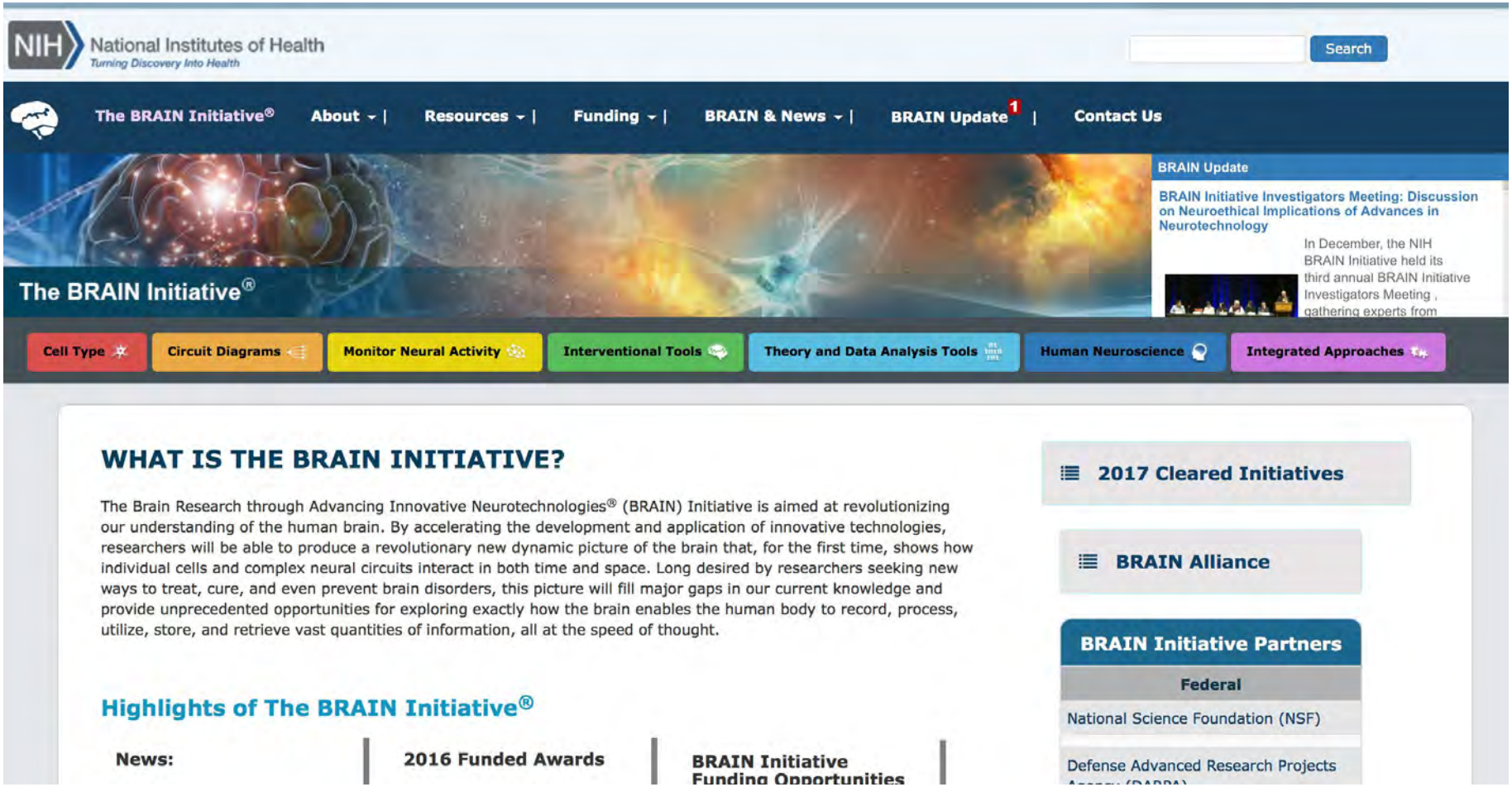
Oxytocin

Placebo

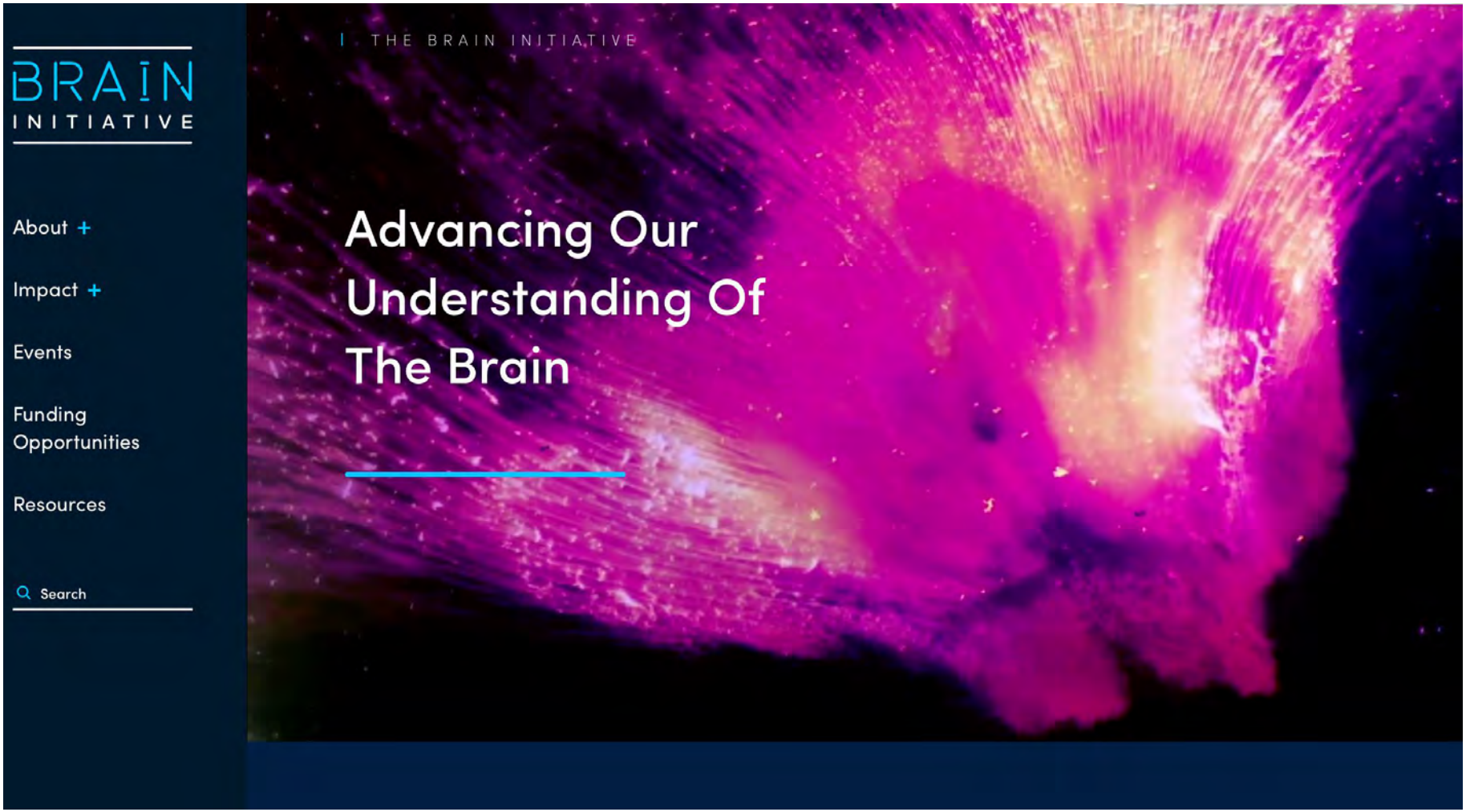
Big EU Perspective



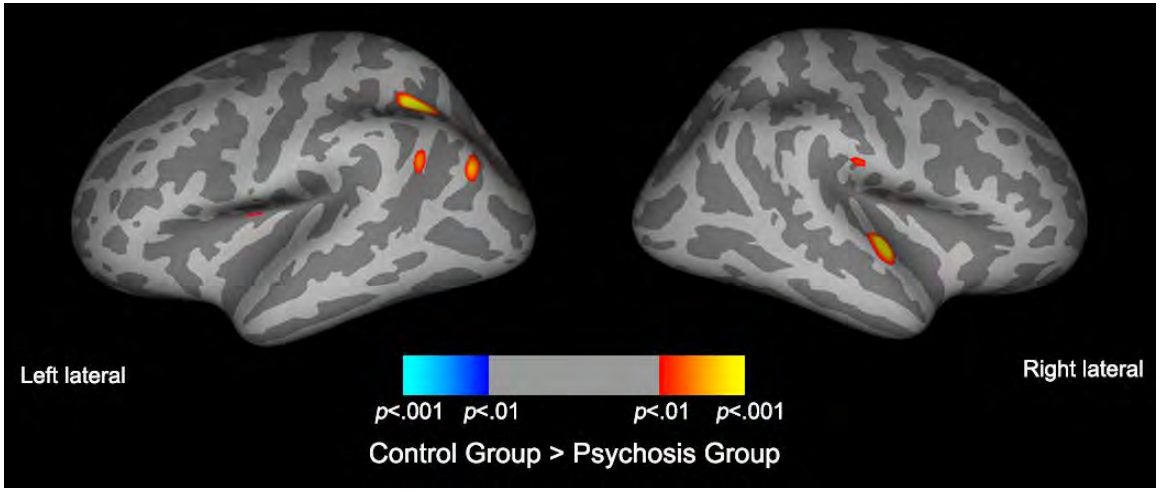
US Brain Initiative = Technology and Circuits

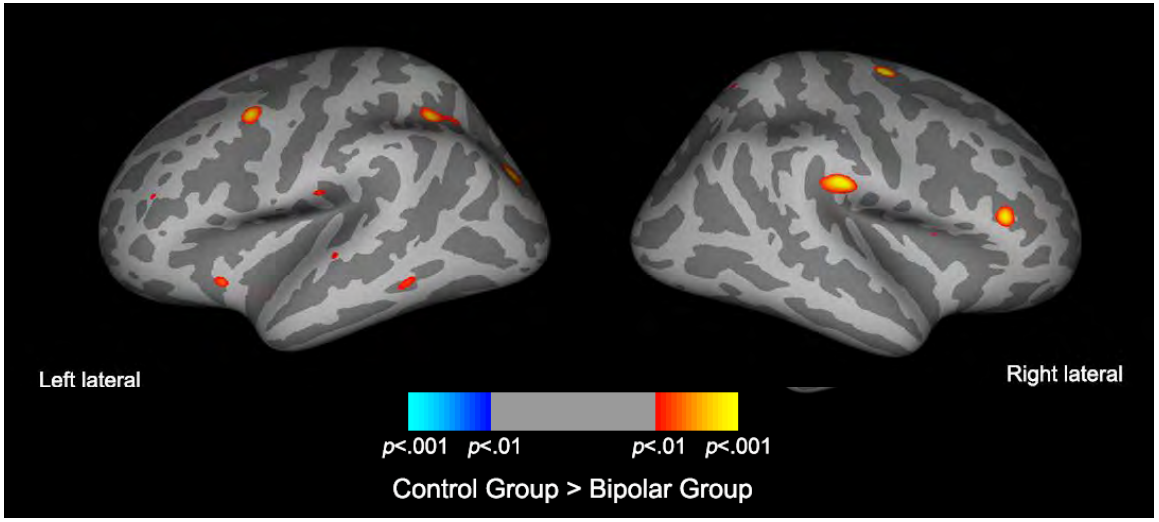


Great Visualization!!



Different cortical thinning patterns

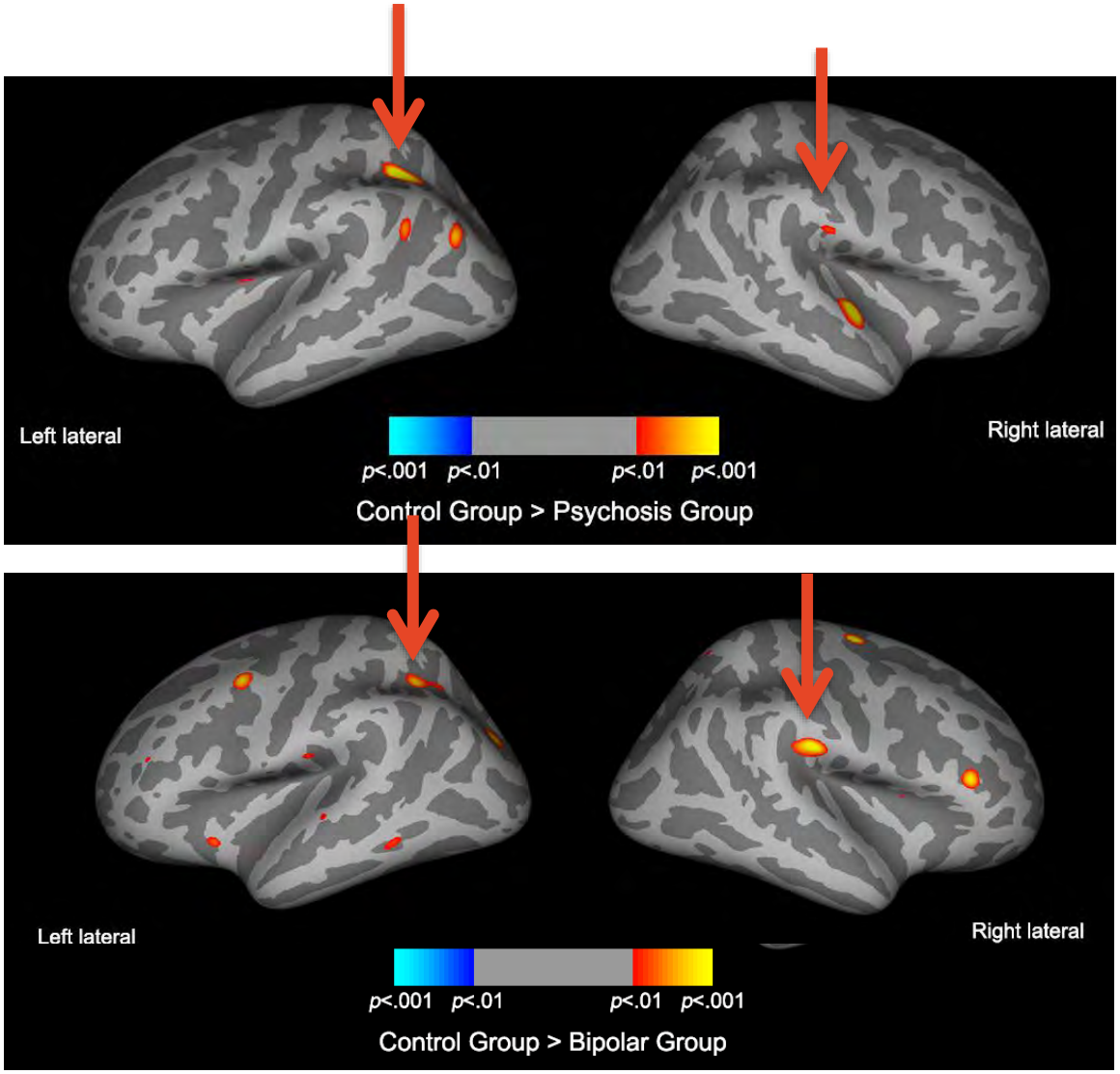




- Different pattern of cortical thinning between young bipolar and psychosis subjects.
- Psychosis similar to reports in older patients
- Bipolar similar to reports in pediatric BPD

HATTON, S. N. et al. (2013)

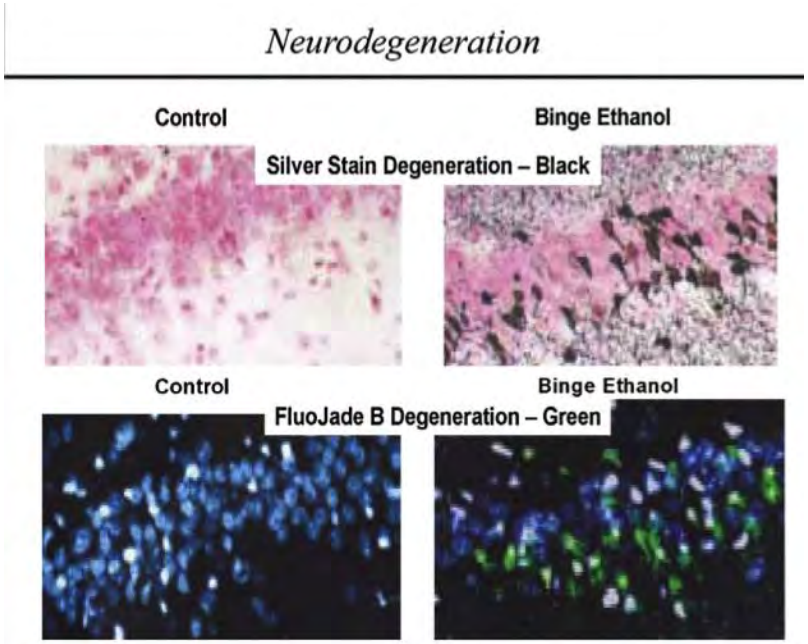
Similar pathology = similar cognitive deficits



- 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.

HATTON, S. N. et al. (2013)

Neurotoxic Effects of Alcohol



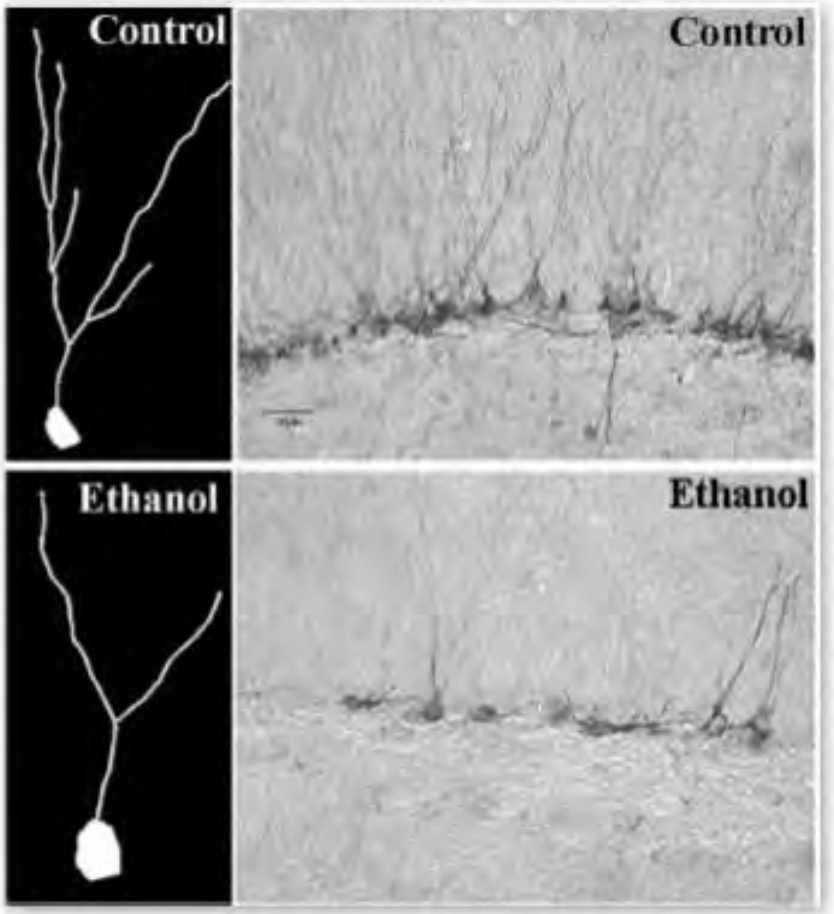


Figure: Alcohol reduces new neuron dendritic growth.
Crews F. & Boettiger C.

Neurotoxic Effects of Alcohol

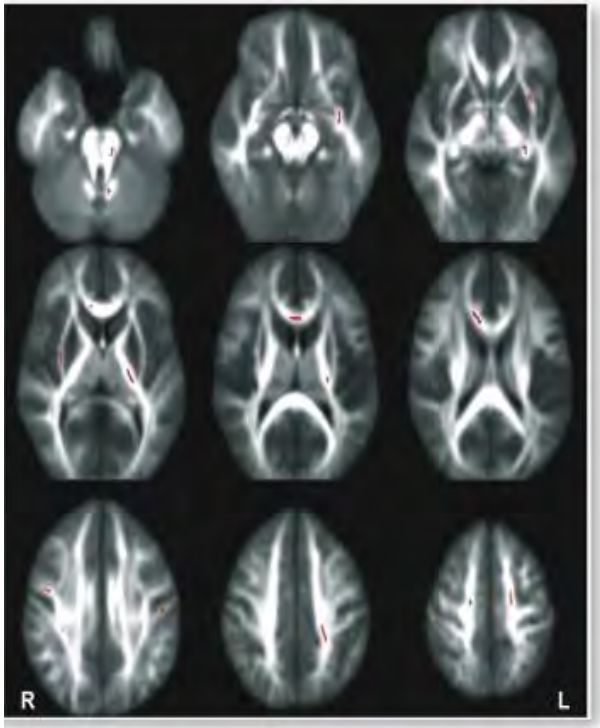
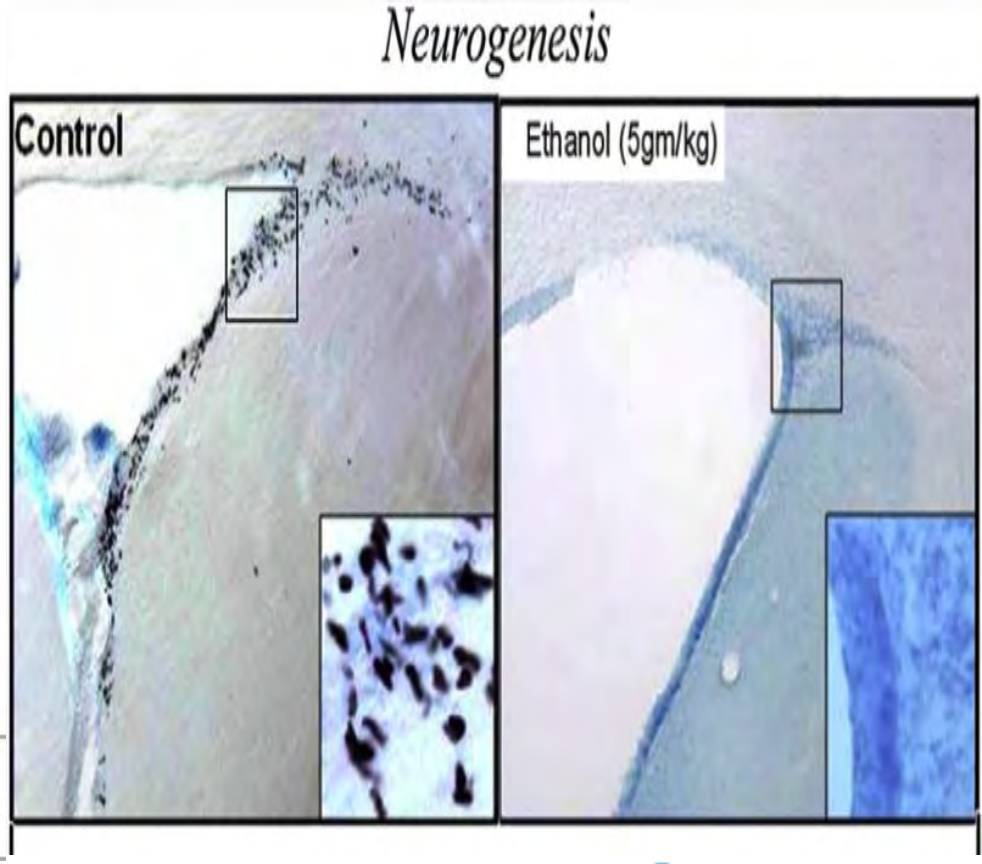


Figure: Clusters (darkened areas) overlaid on average fractional anisotropy mask highlight where binge drinking adolescents had lower fractional anisotropy than controls. McQueeny T, et al



brain&mind
RESEARCH INSTITUTE
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Regional Effects of Alcohol

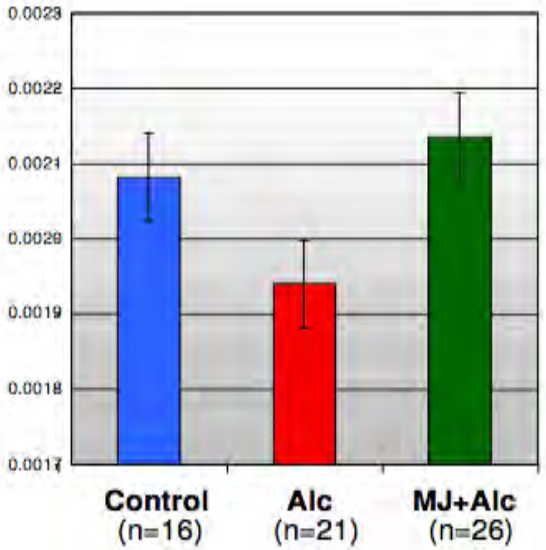


Figure: Hippocampal volume for adolescents with different substance use patterns. Squeglia L et al

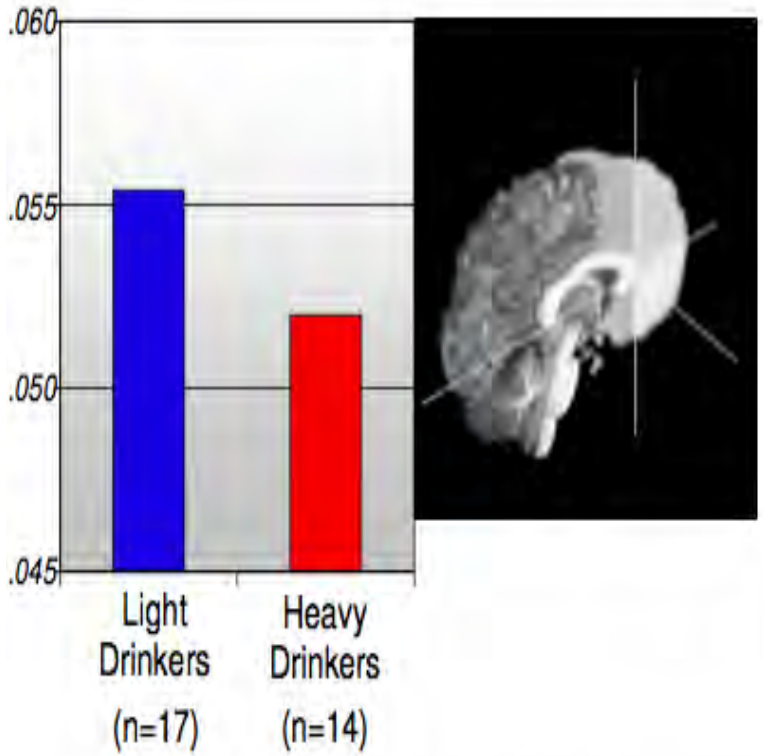
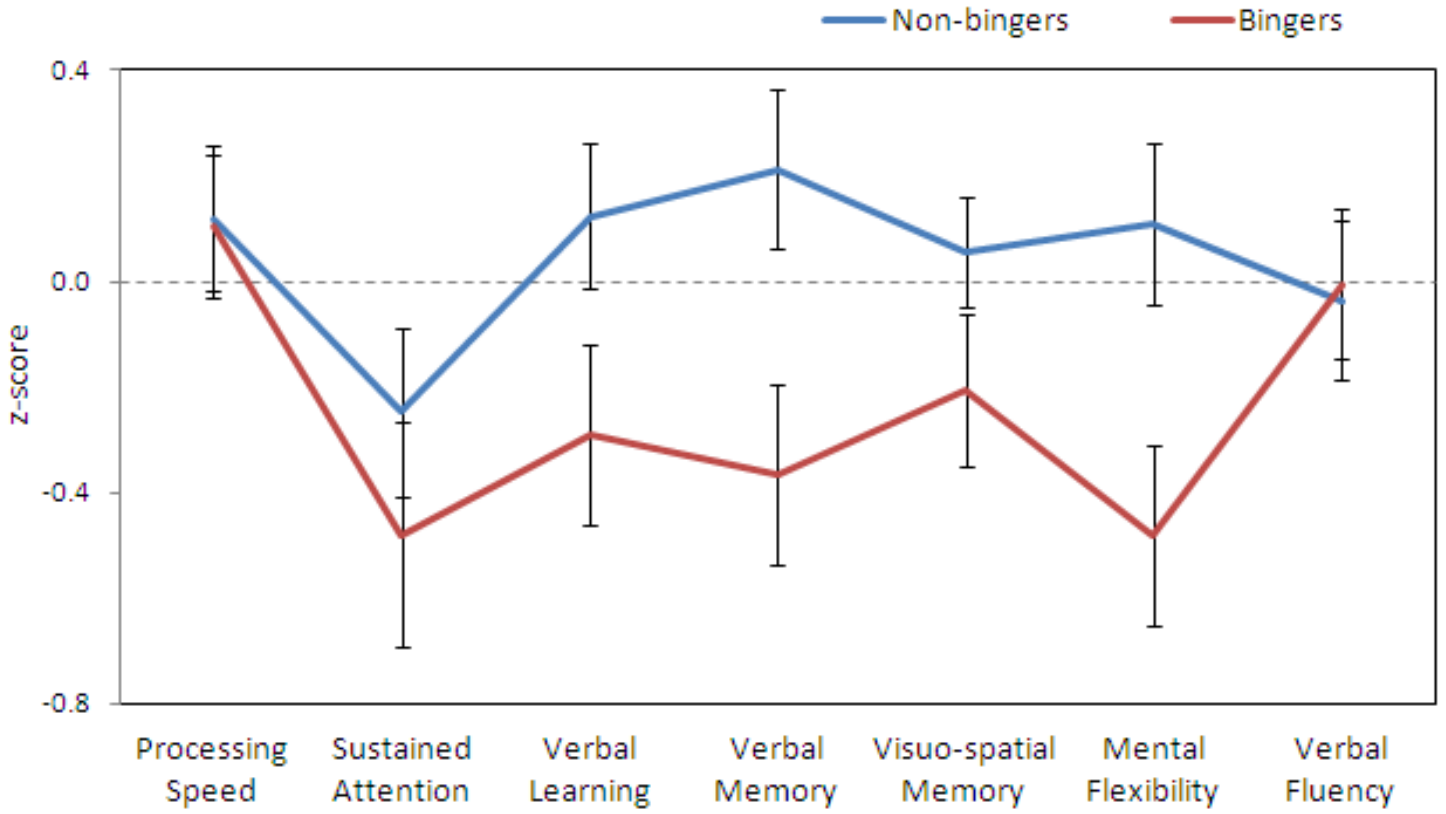


Figure: Ventral prefrontal volume in adolescents with minimal and heavy drinking histories; ventral prefrontal region is highlight in white in the figure to the right. Squeglia L et al

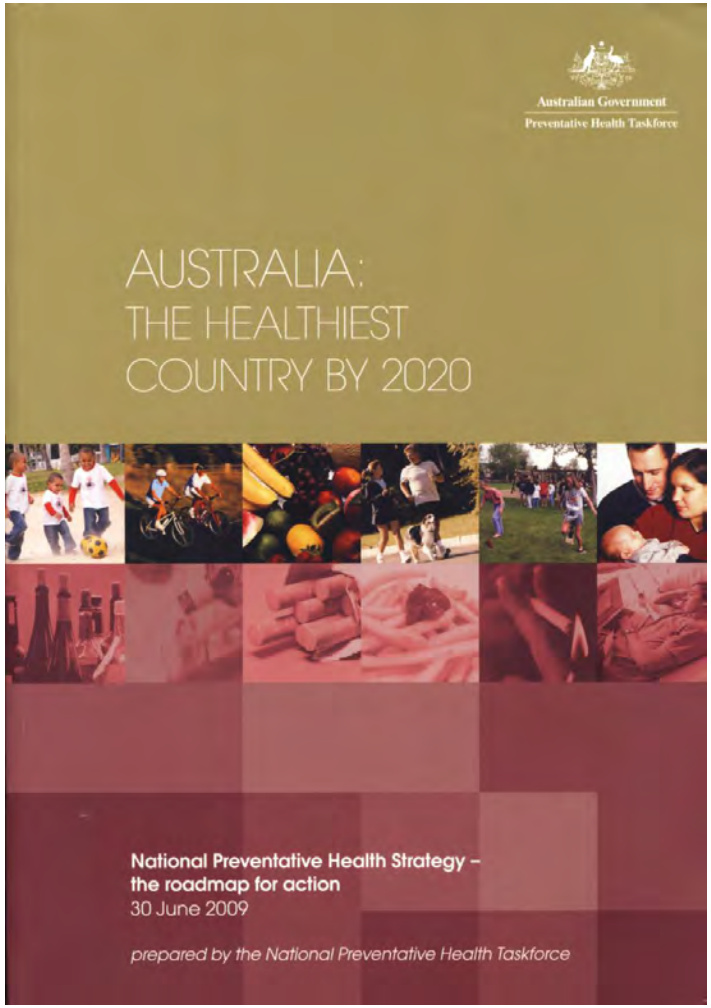
Neuropsychological differences between binge drinkers and non-bingers with co-morbid mood disorders



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

De Regt et al (under review) *J Int Neuropsychol Soc*

Alcohol-related Policy: Fearful and Reactive

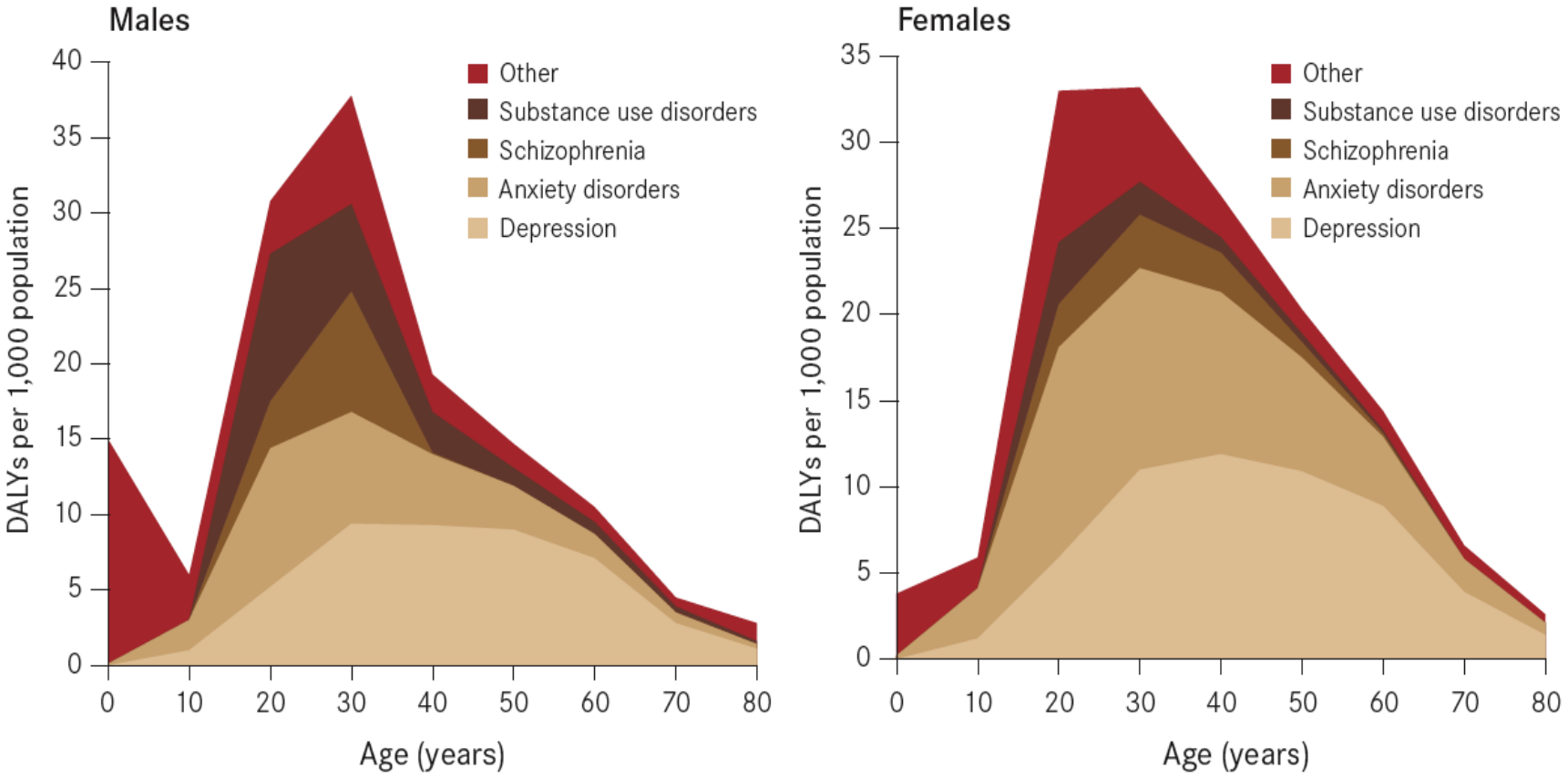


Public Policy Issues

- 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

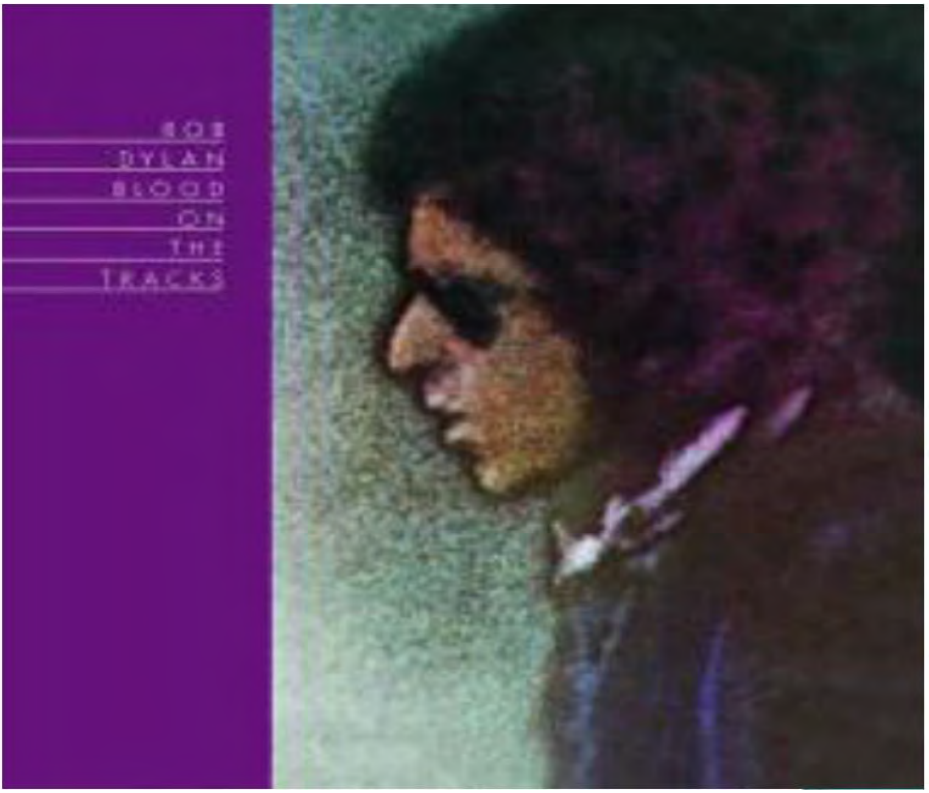


Victorian State Government. Victorian Burden of Disease Study: Mortality and morbidity in 2001. Accessed 1/3/2010 http://www.health.vic.gov.au/healthstatus/bodvic/bod_current.htm

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

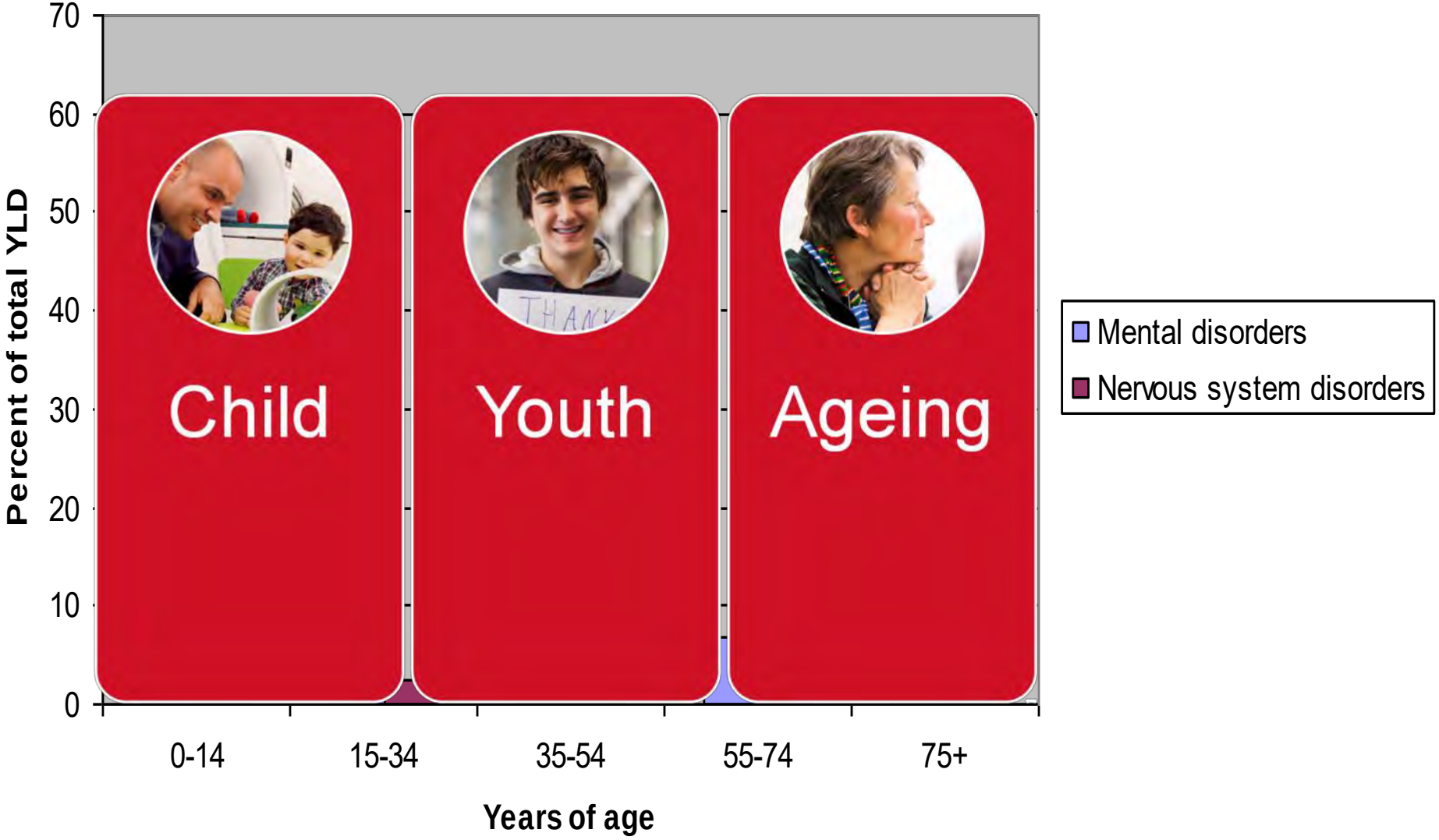
Hunted like a crocodile, ravaged in the corn

"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



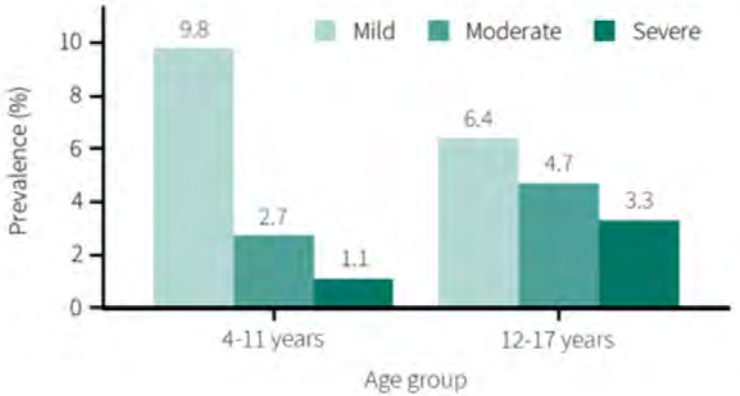
Child and Youth Prevalence: 2015

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

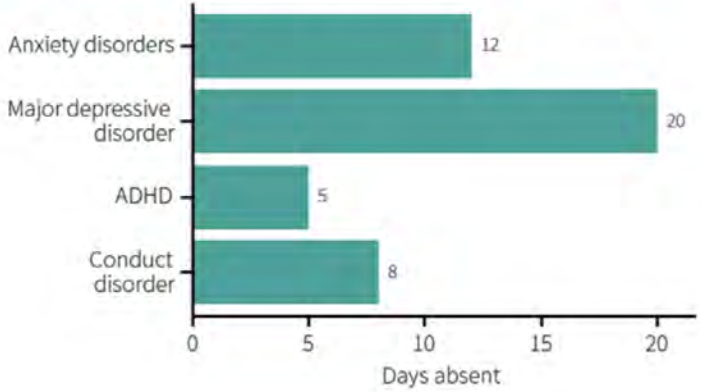
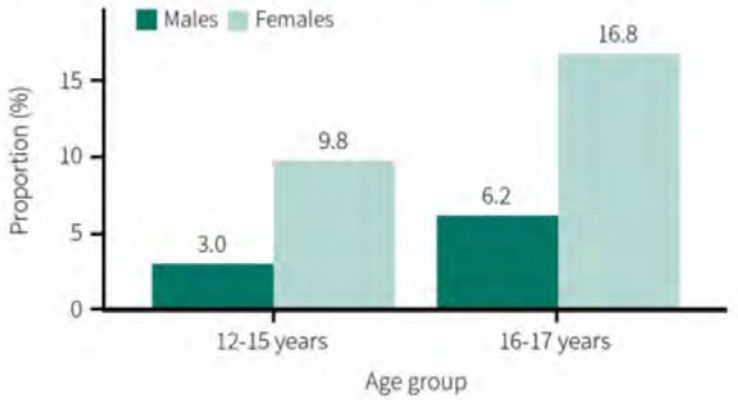


Figure 17: Self harm in the past 12 months in 12-17 year-olds by sex and age group



OECD Priorities

BMJ

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

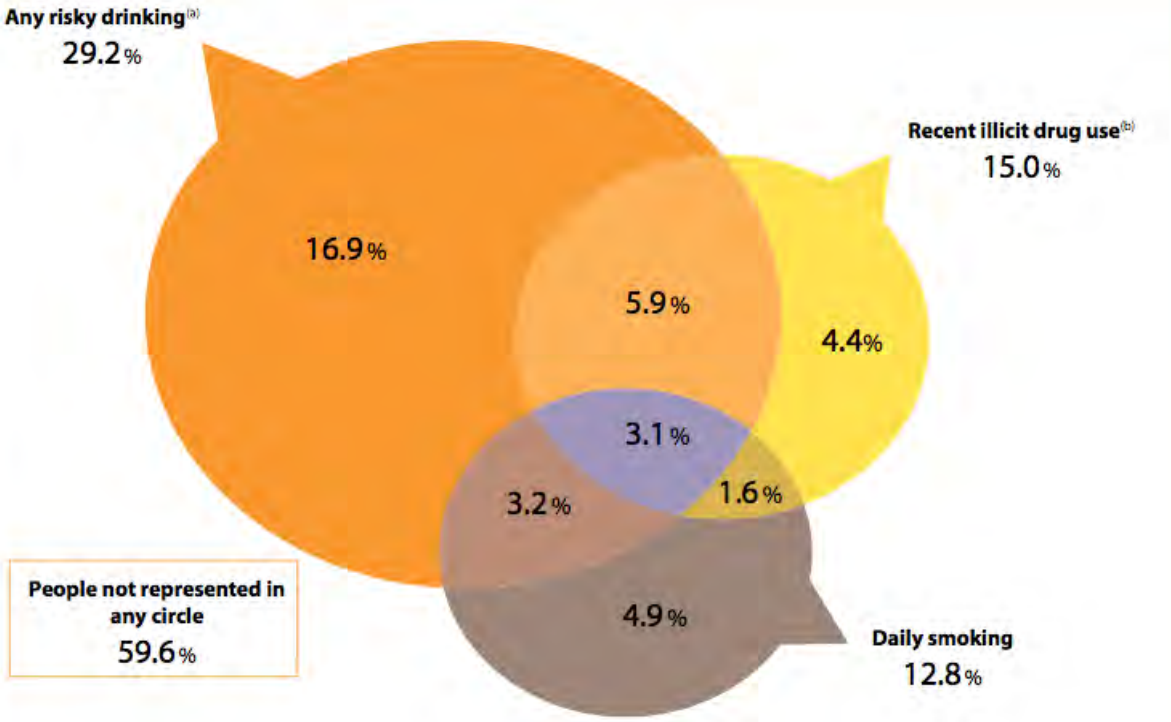
EDITORIALS

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



(a) Either on average had more than 2 standard drinks per day or had more than 4 standard drinks on 1 occasion at least once a month or both.

(b) Illicit use of at least 1 of 17 drugs in the past 12 months.

Figure 2.1: Relationships between daily smoking, risky drinking[a] and recent illicit drug use[b], people aged 14 or older, 2013 (per cent)

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
- Personality [2900; *3800*]
- Psychiatric signs [1400; *2300*]
- Cognition [200; *1100*]
- *Sleep patterns [1000]*
- *Inattention [1000]*
- **Vitamin D *[2644]***
- **Antibodies *[2644]***

14
- Personality [2200; *3100*]
- Psychiatric signs [1100; *2000*]
- Binocular Rivalry [800; *1700*]
- **Vitamin D *[2130]***
- **Antibodies *[2130]***

16
- 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
- Brain imaging [800; *1350*]
- Neuroticism [800; *1800*]
- Psychiatric signs [800; *1800*]
- **Hair Cortisol *[500]***
- **Stress *[500]***

18-30
- **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. Hansell[1]*, M. J. Wright[1], S. E. Medland[1], T. A. Davenport[2], N. R. Wray[1], N. G. Martin[1] and I. B. Hickie[2]

[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.

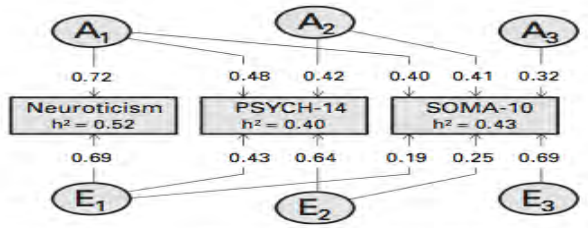
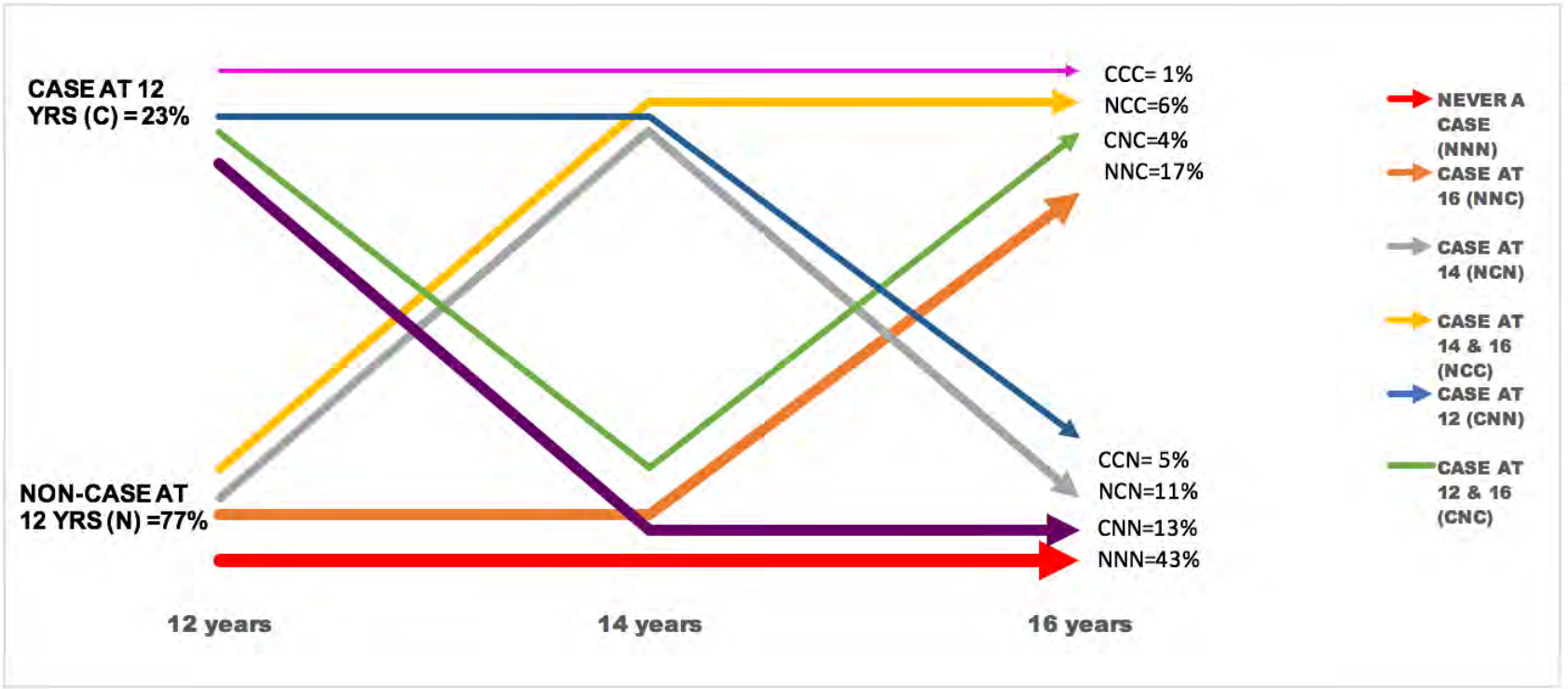


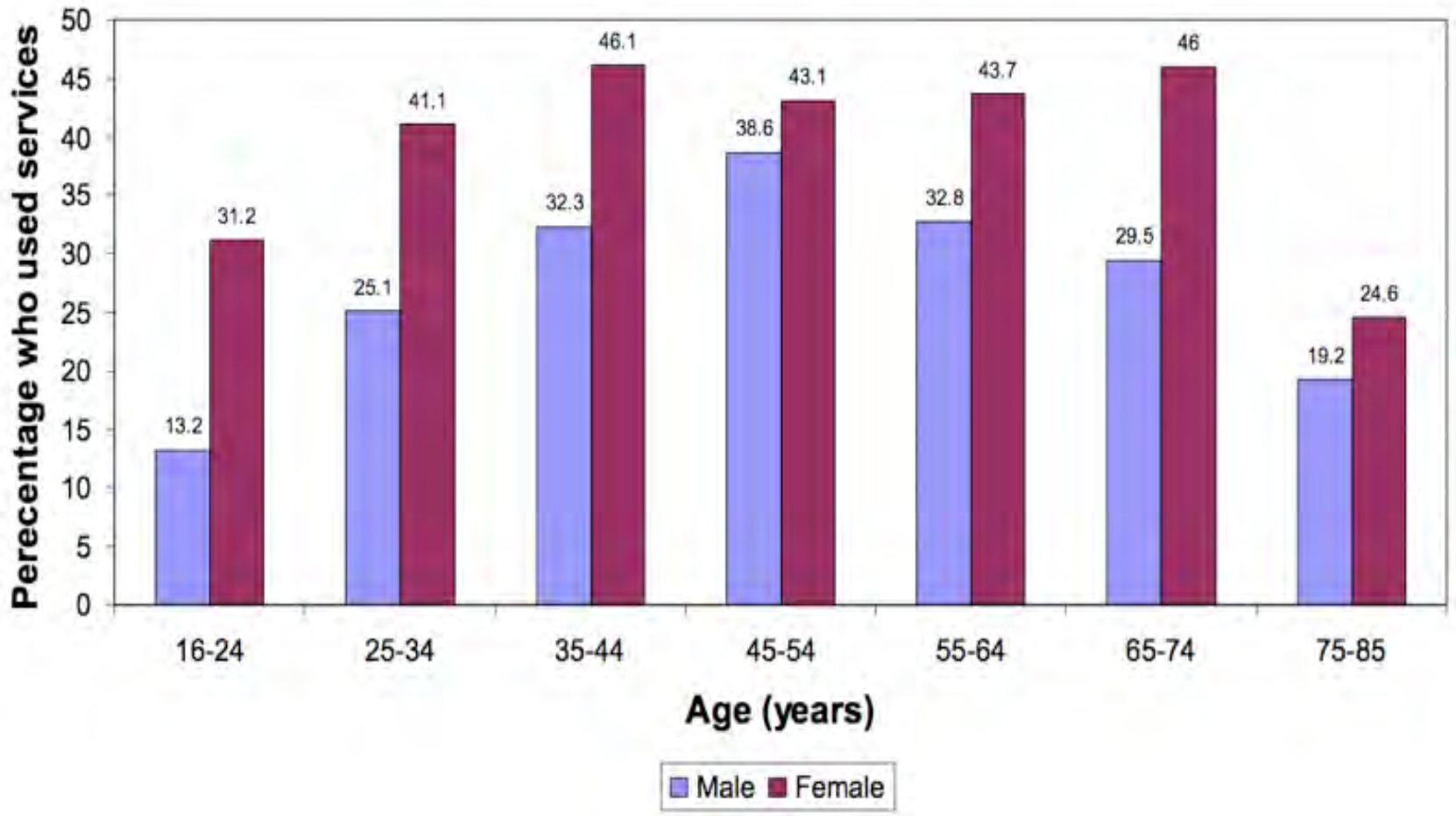
Fig. 3. Parameter estimates for the trivariate AE Cholesky model showing covariation between neuroticism, PSYCH-14 and SOMA-10. The model includes additive genetic (A1, A2, A3) and unshared environmental (E1, E2, E3) sources. Estimates are standardized such that when squared they indicate the percentage 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
  - B. Reducing self-harm, accidents and antisocial behaviours
    - Requiring much more specific focus
  - C. Preventing development of alcohol/substance misuse
    - Major community and personal issue
  - D. Improving physical health outcomes
    - Cardiometabolic (smoking) and metabolic risk
  - 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

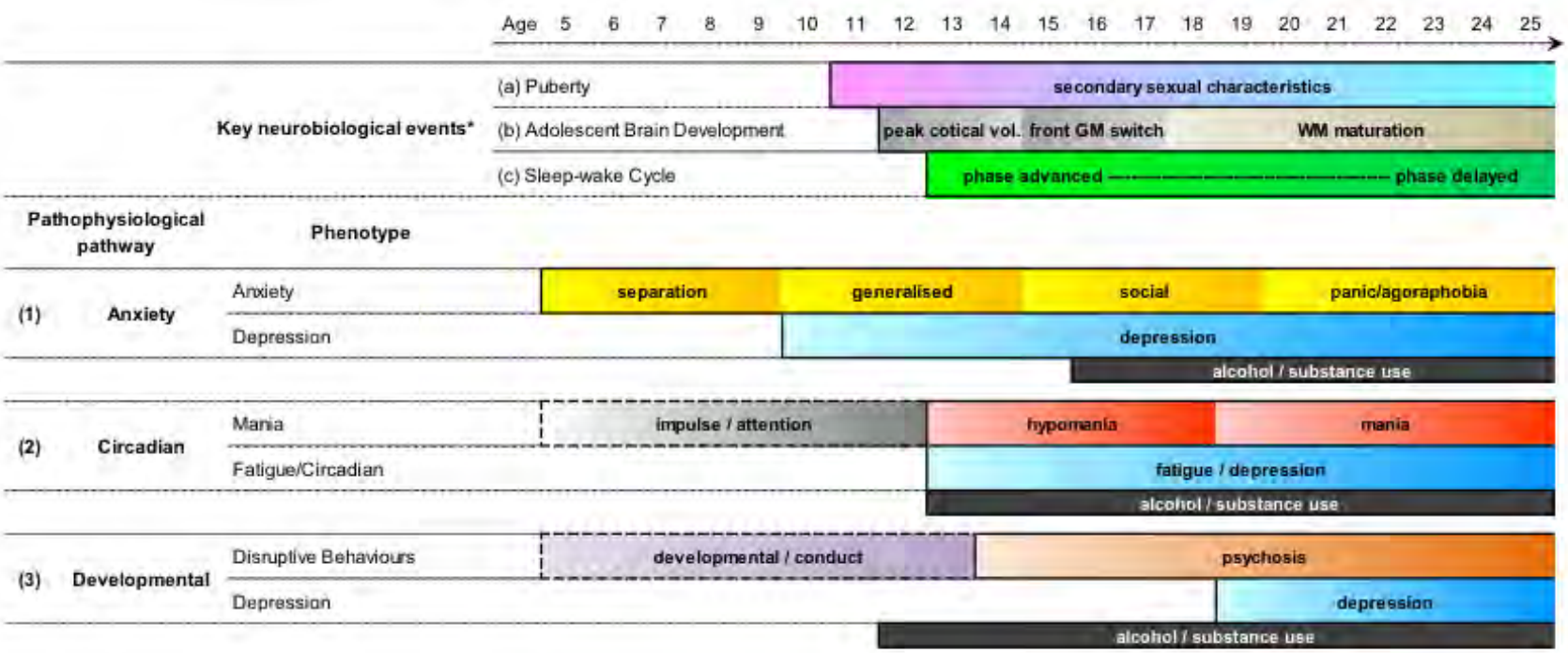
Personal Devices – When/What will you monitor

- 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

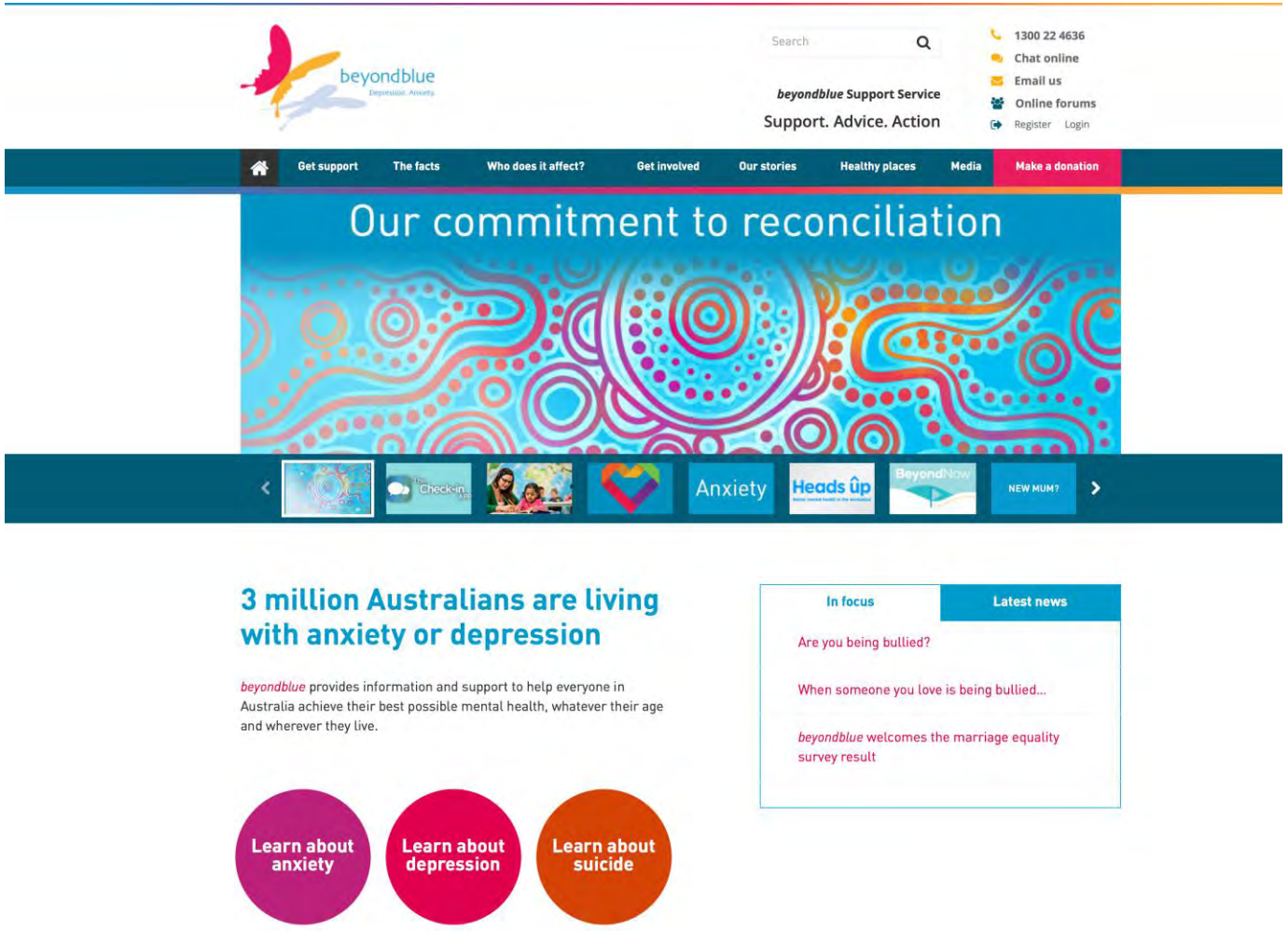
- Is there access to high quality care?
  - Issues of geography and price
- Is it facilitated by the institution?
  - Are pathways in place and promoted?
- What are the options in care?
  - Online entry
  - Clinical services
- Providing much better evidence
  - Its an educated audience
- What are the 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)***

beyondblue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Search
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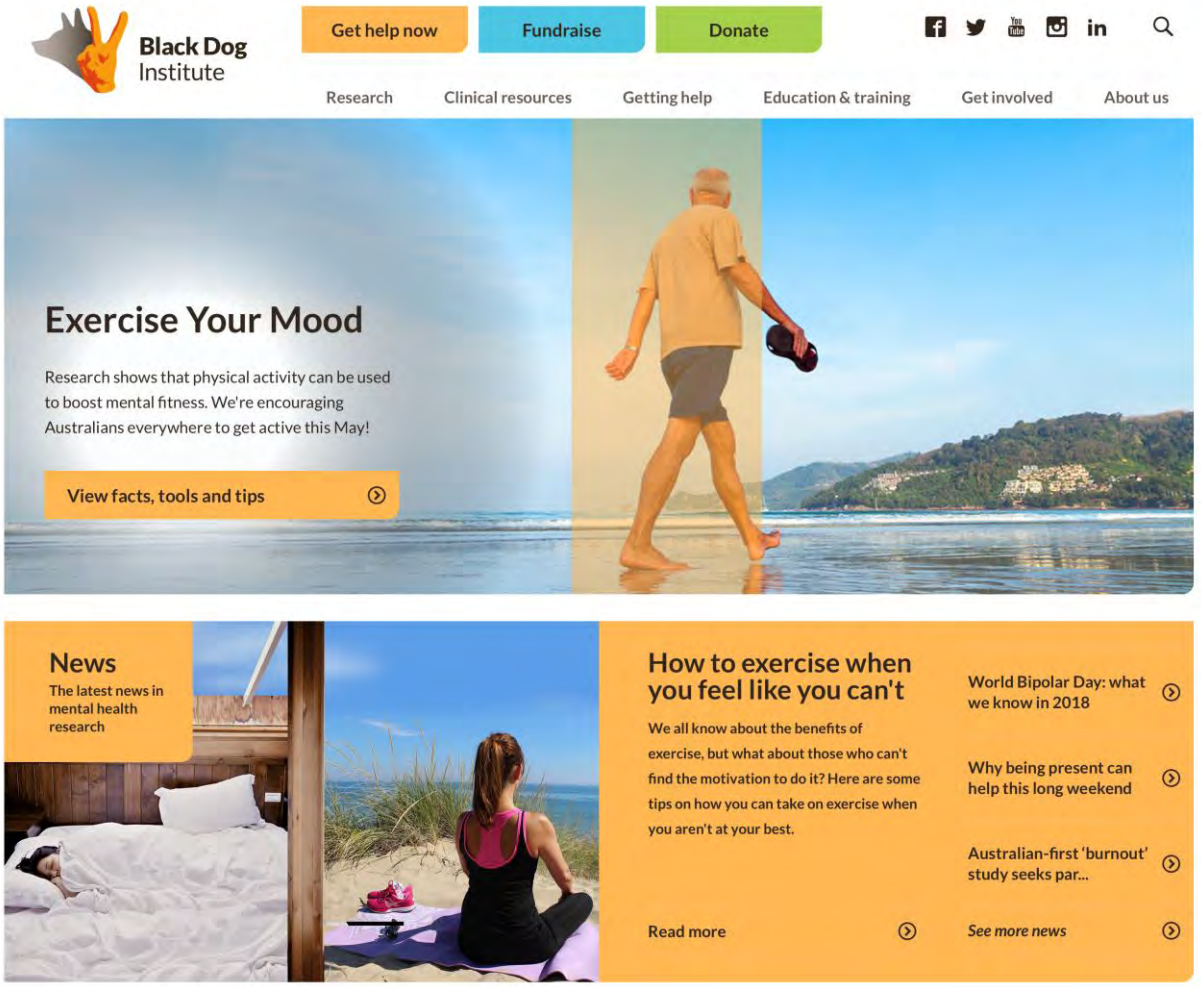
Get support
The facts
Who does it affect?
Get involved
Our stories
Healthy places
Media
Make a donation
Our commitment to reconciliation
Anxiety
Heads up
BeyondNow
NEW MUM?
3 million Australians are living with anxiety or depression
beyondblue provides information and support to help everyone in Australia 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

blackdog


Black Dog Institute
Get help now
Fundraise
Donate
Research
Clinical resources
Getting help
Education & training
Get involved
About us
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
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Why being present can help this long weekend
Australian-first 'burnout' study seeks par...
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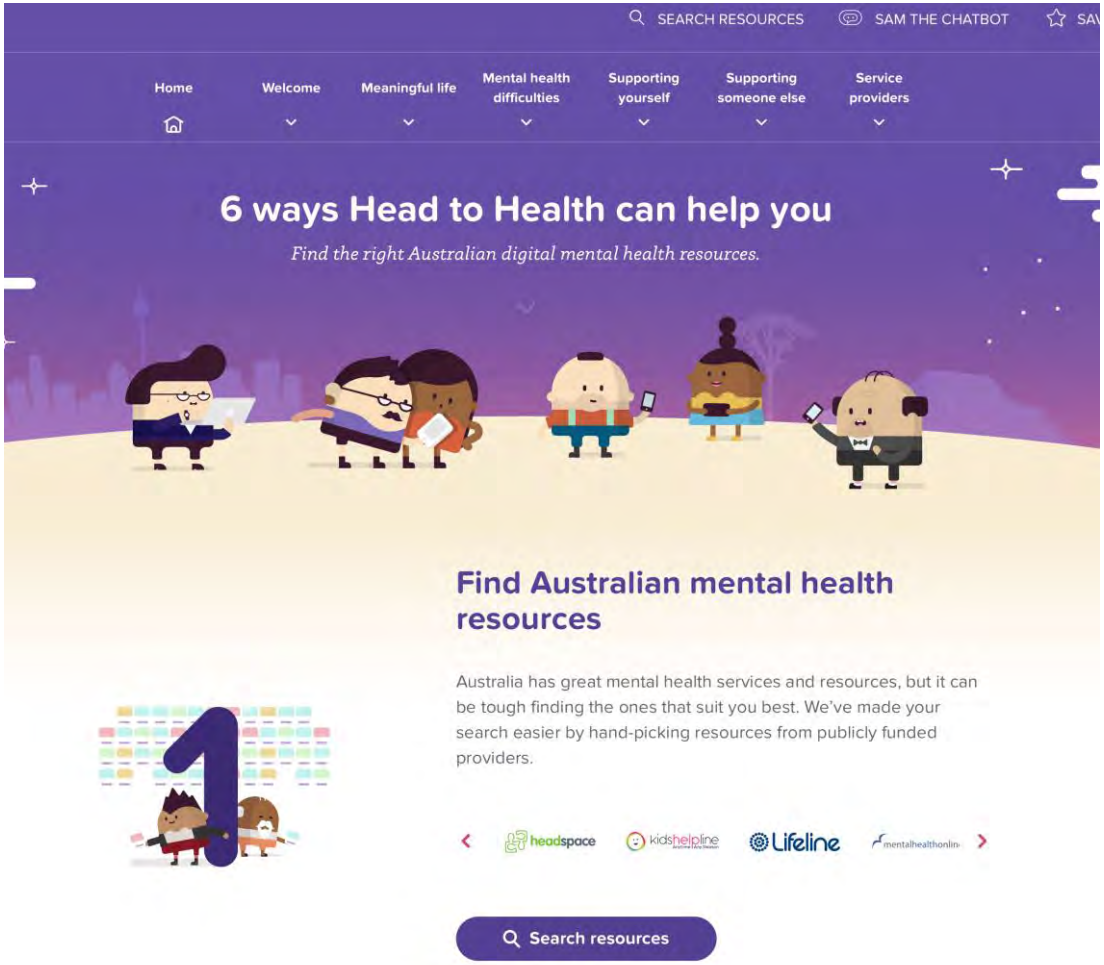
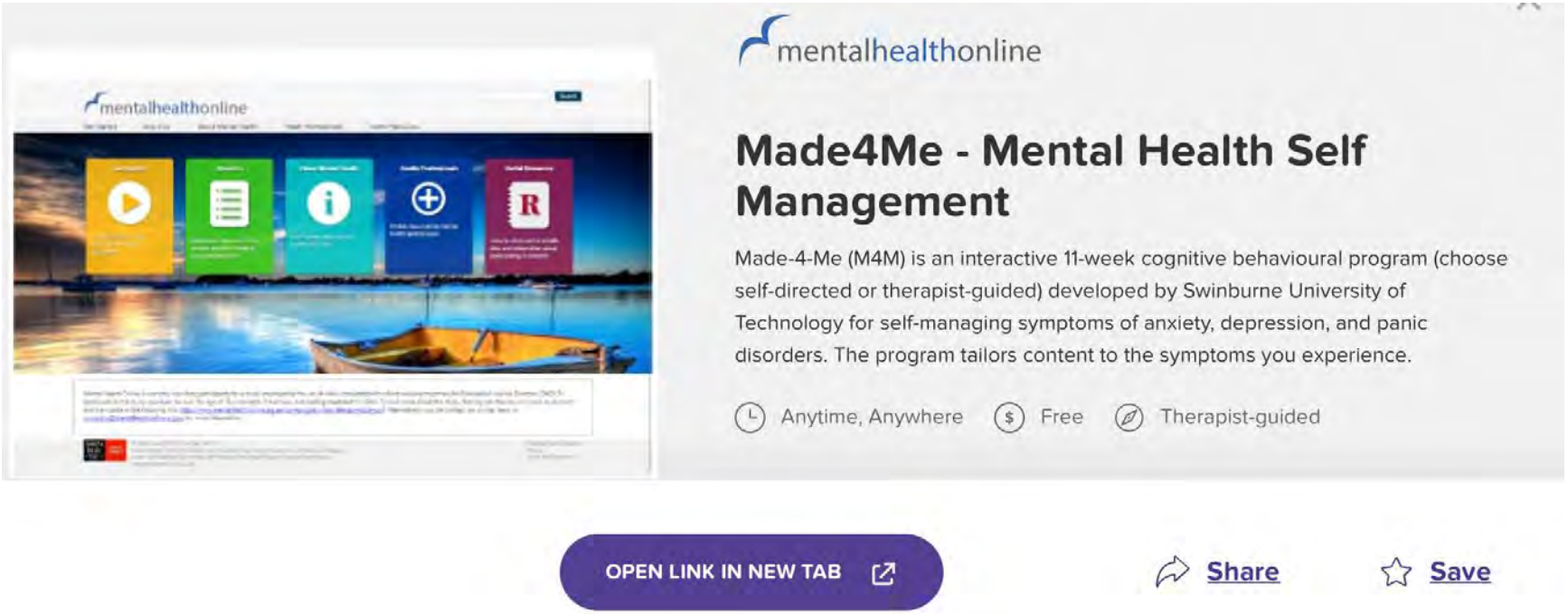
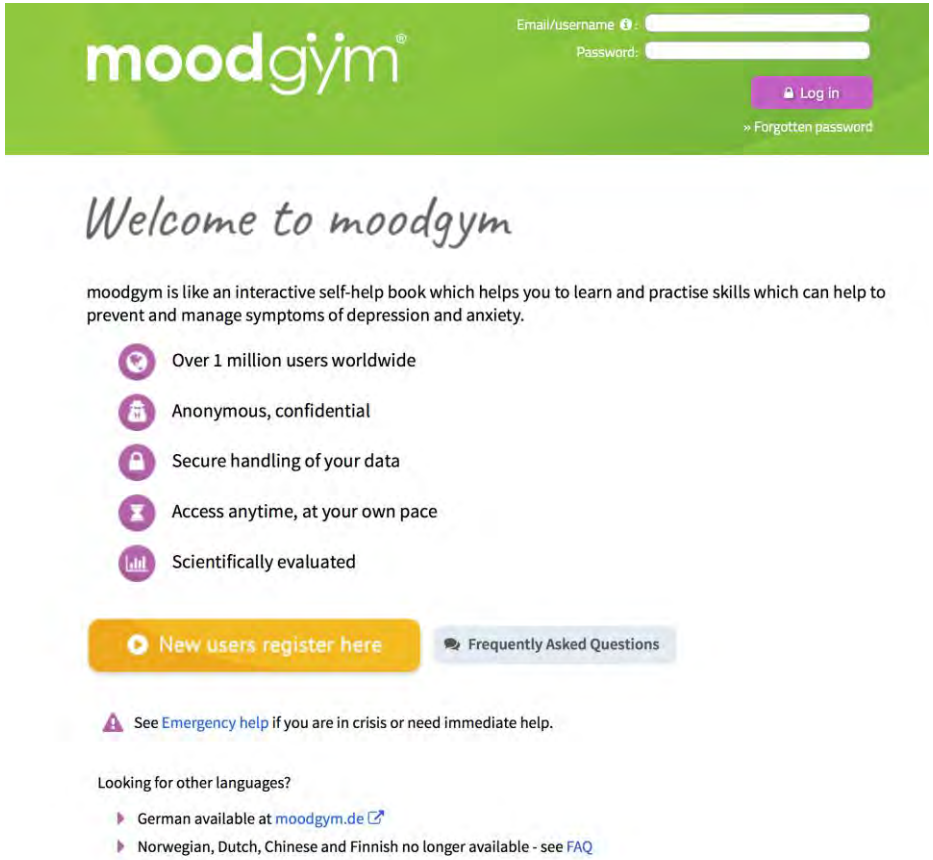
Head to health



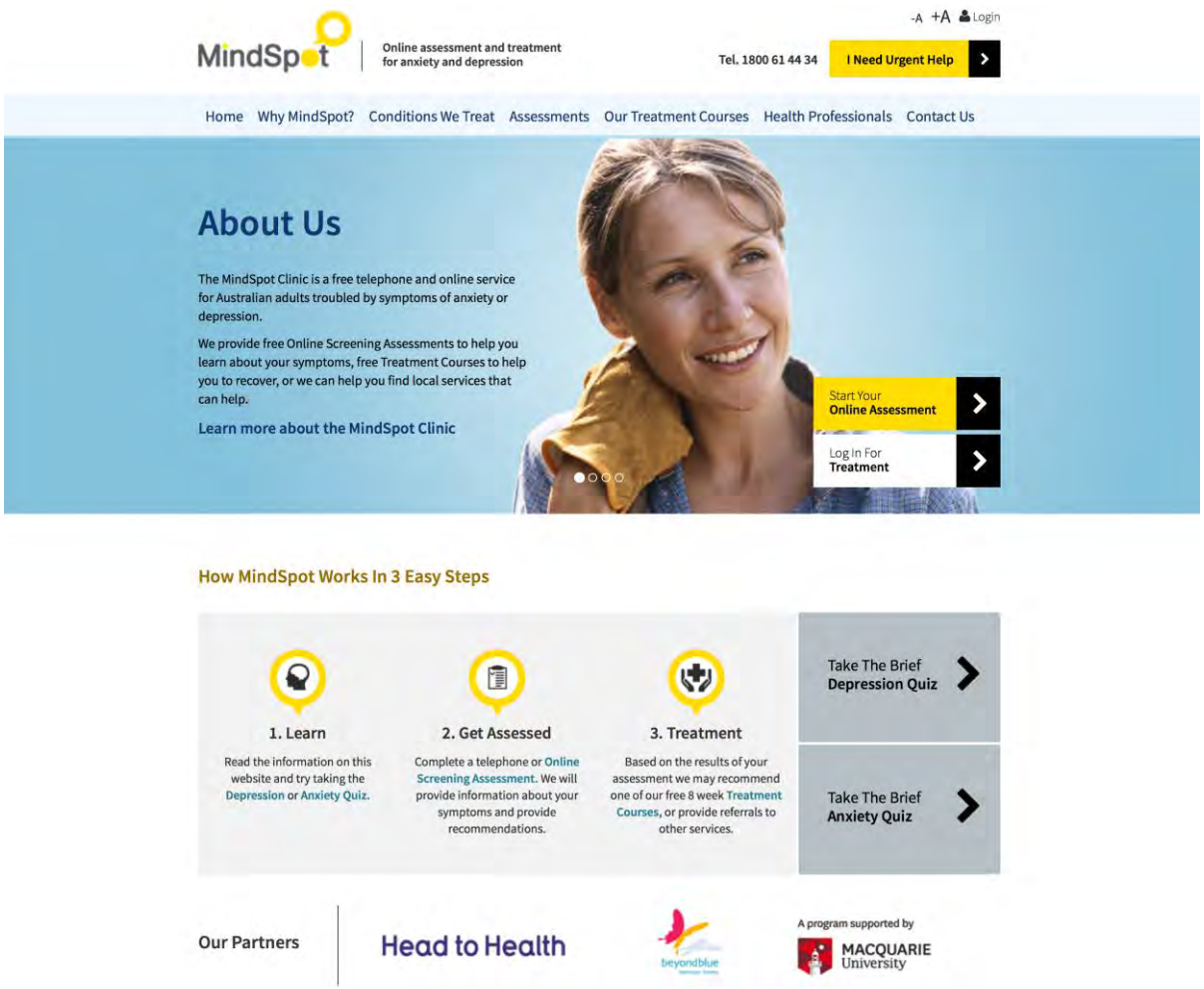
self-directed or therapist-guided



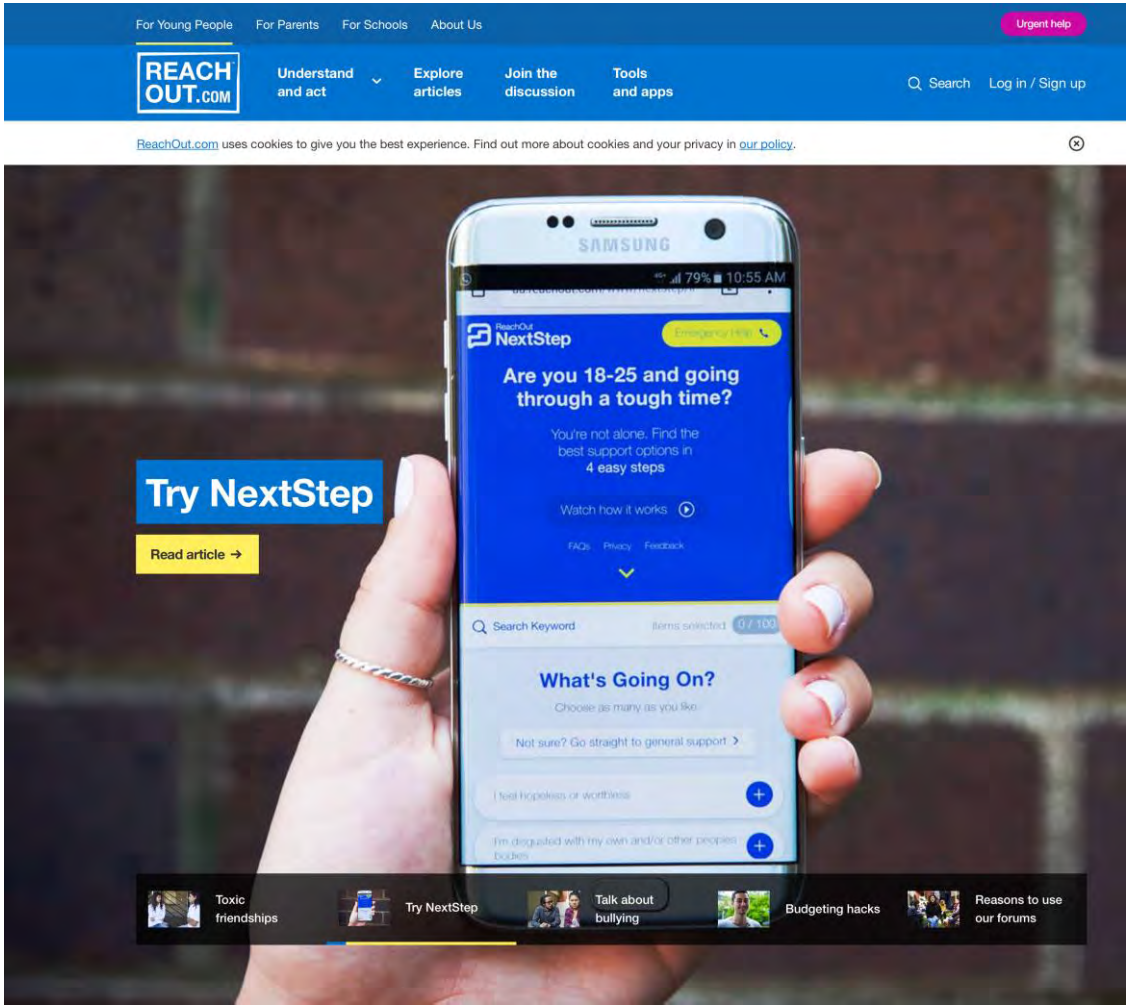
Moodgym – CBT online



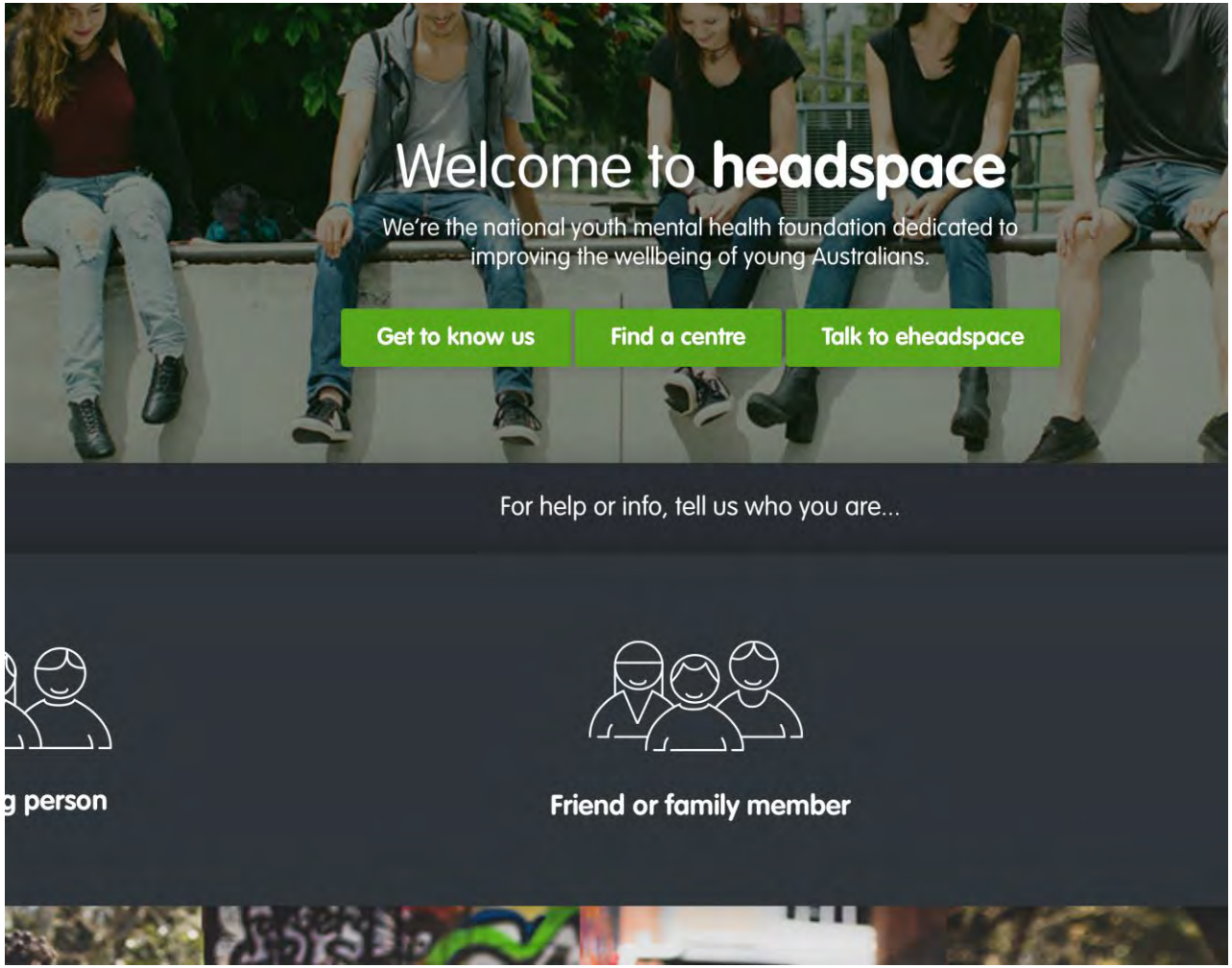
Mindspot clinical service



Reachout- next step



Headspace centres



Orygen youth health

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. Choi[2], R. A. Calvo[3], N. Glozier[2], H. Christensen[4] 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

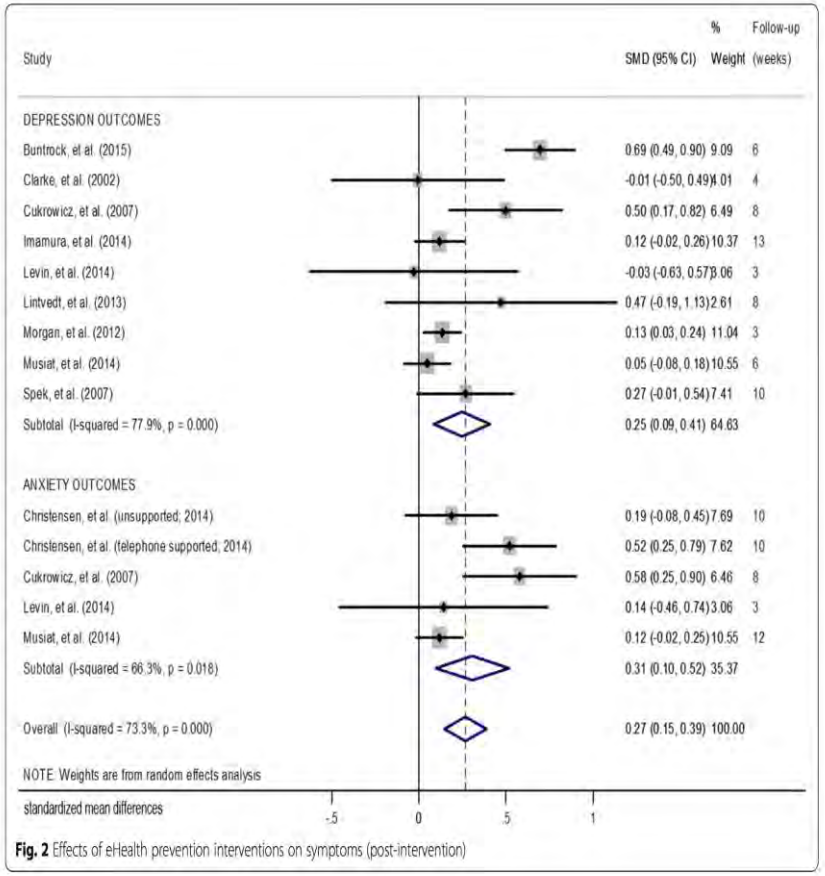


Fig. 2 Effects of eHealth prevention interventions on symptoms (post-intervention)

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.

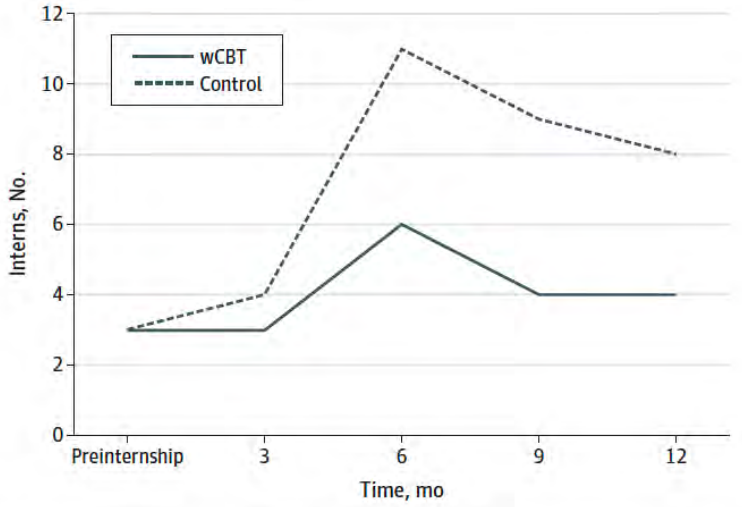
INTERVENTIONS Interns were randomly assigned to 2 study groups (wCBT and attention-control group [ACG]), and completed study activities lasting 30 minutes each week for 4 weeks prior to starting internship year. Participants assigned to wCBT completed online CBT modules and those assigned to ACG received 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 Barbui 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

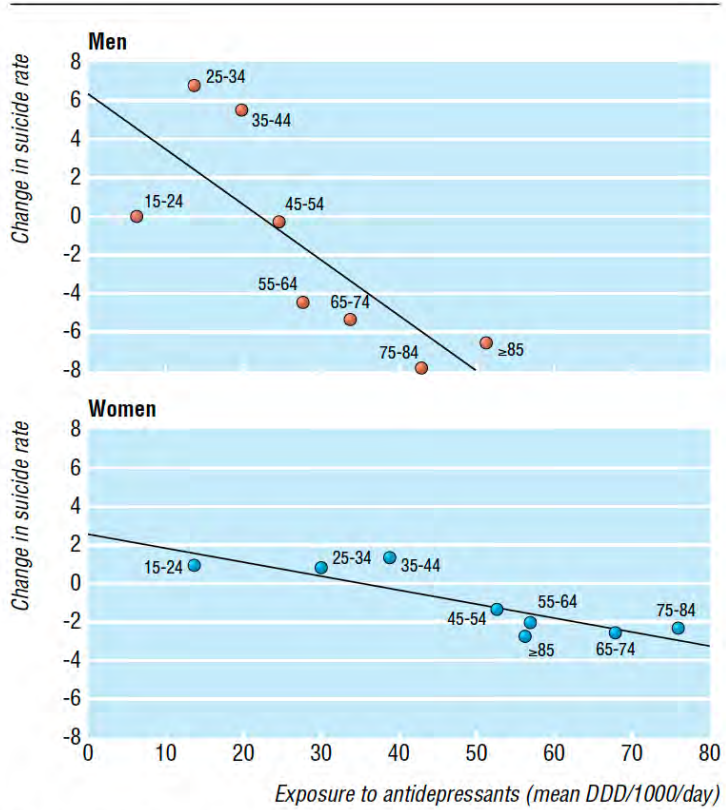


Fig 1 Change in suicide rate by level of exposure to antidepressants in each age group among men and women aged >15 years

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*, Georgia 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.

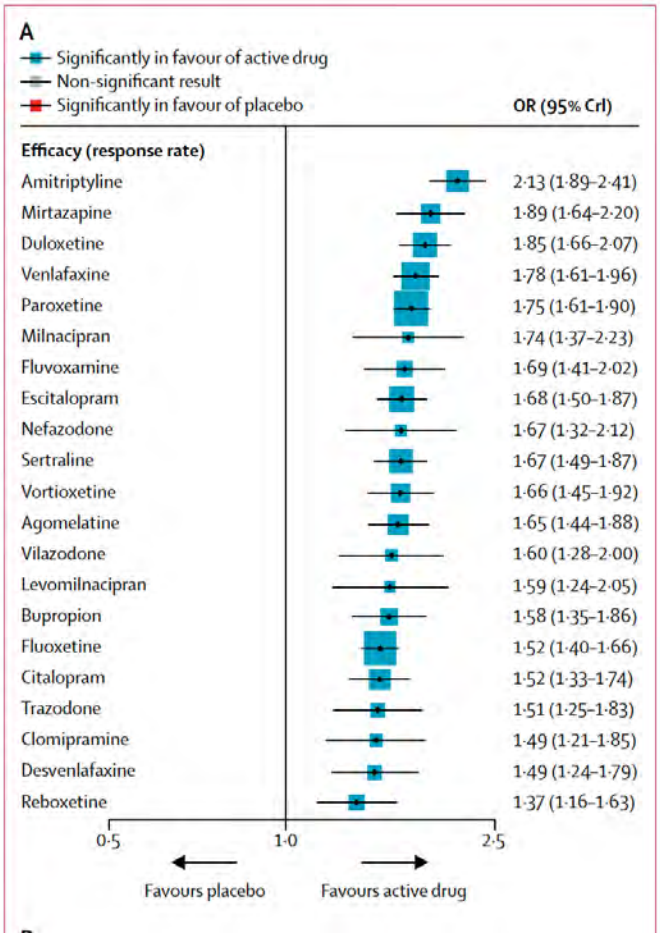
Findings We identified 28 552 citations and of these included 522 trials comprising 116 477 participants. In terms of efficacy, all antidepressants were more effective than placebo, with ORs ranging between 2·13 (95% credible interval [CrI] 1·89–2·41) for amitriptyline and 1·37 (1·16–1·63) for reboxetine. For acceptability, only agomelatine (OR 0·84, 95% CrI 0·72–0·97) 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.

Published Online February 21, 2018 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

Efficacy and Acceptability (2018)



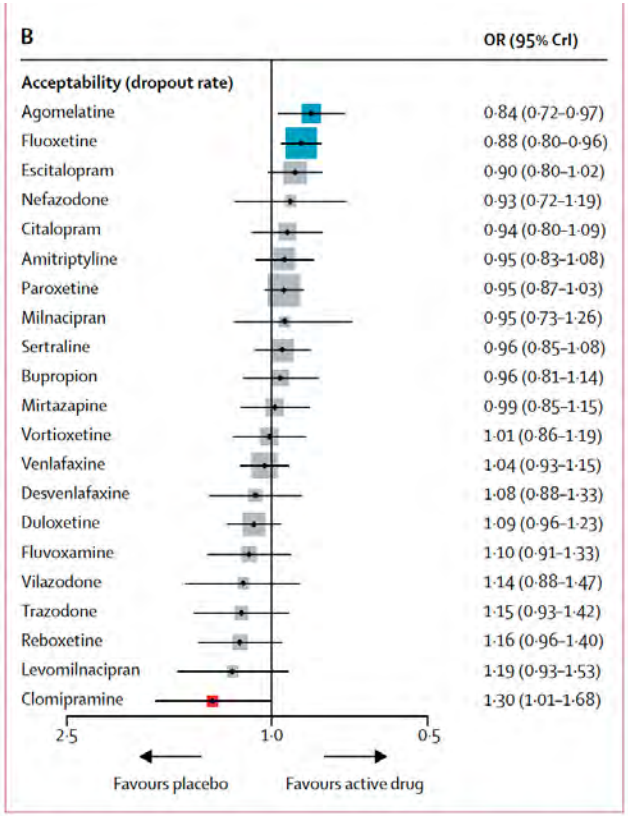


***Figure 3*: Forest plots of network meta-analysis of all trials for efficacy (A) and acceptability (B)**
Antidepressants were compared with placebo, which was the reference compound. OR=odds ratio. CrI=credible interval.

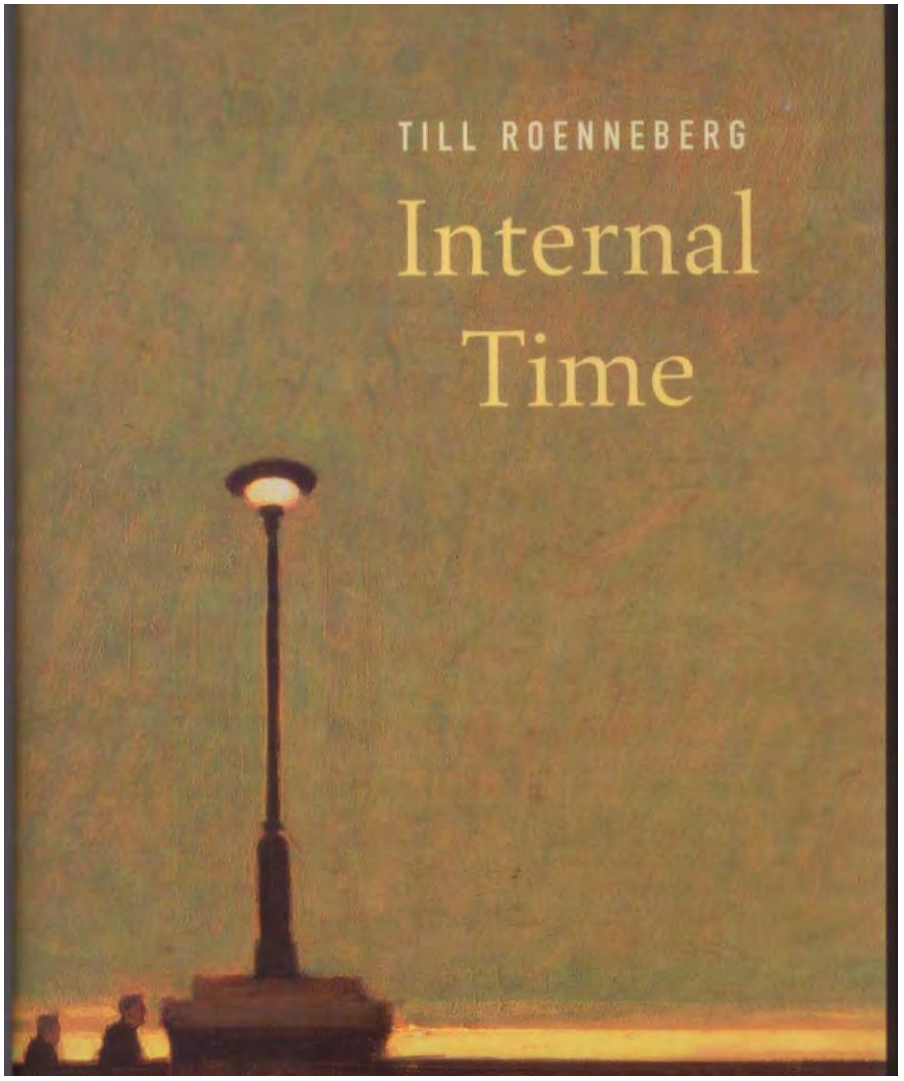
Light-Dark Cycle as the principle driver of rhythms

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.



Summary of the key concepts: BMC Med 2013

OPINION Open Access

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

Ian B Hickie[1*], Sharon L Naismith[1], Rébecca Robillard[1], Elizabeth M Scott[1,2] and Daniel F Hermens[1]

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, PhD[1], Yu Fang, MSE[2], J. Todd Arnedt, PhD[1], Amy L. Cochran, PhD[3], Patricia J. Deldin, PhD[1], Adam I. Kaplin, MD PhD[4], and Srijan Sen, MD PhD[1,2]

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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

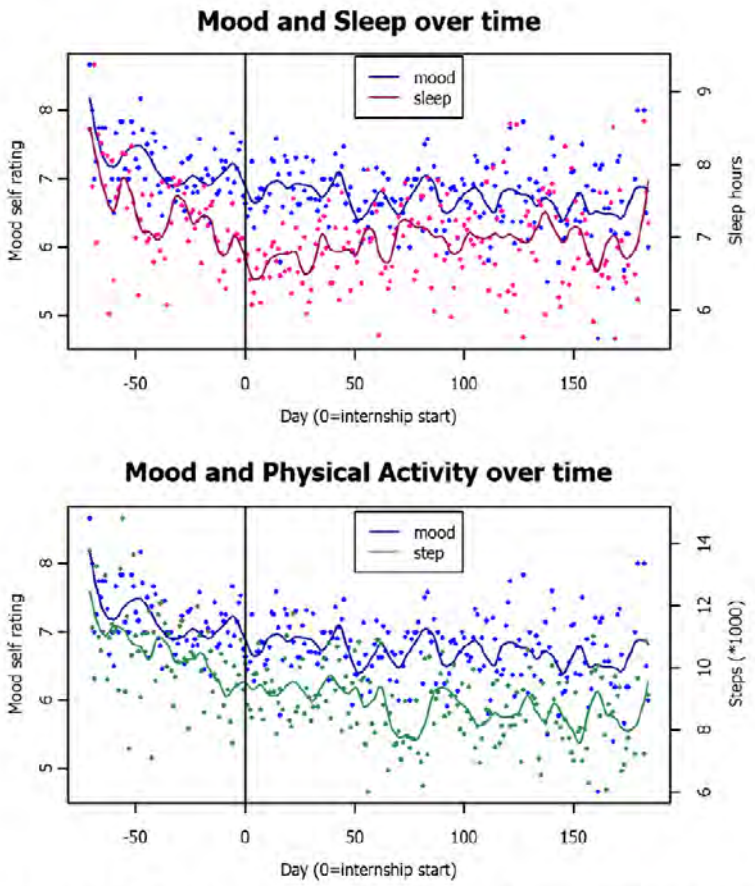


Figure 1 The relationship between mood and sleep, and mood and physical activity through internship.

Headspace: a national development of regional service partnerships

HEADSPACE MACARTHUR / CAMPBELLTOWN / S.HIGHLANDS

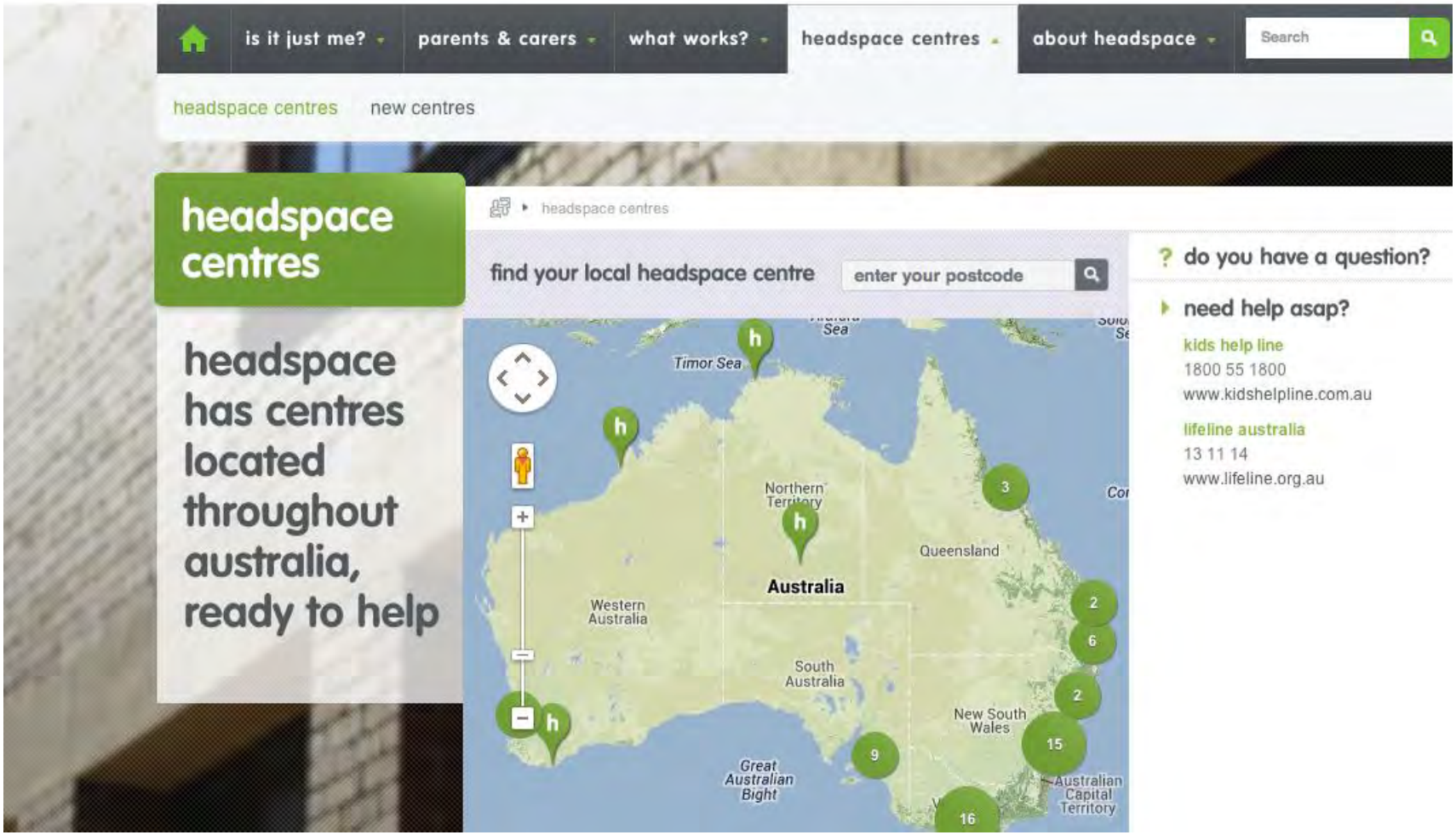
May 18th, 2007

Lead Agency:
Brain & Mind Research Institute

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

Community of Youth Services
Newsletter #1

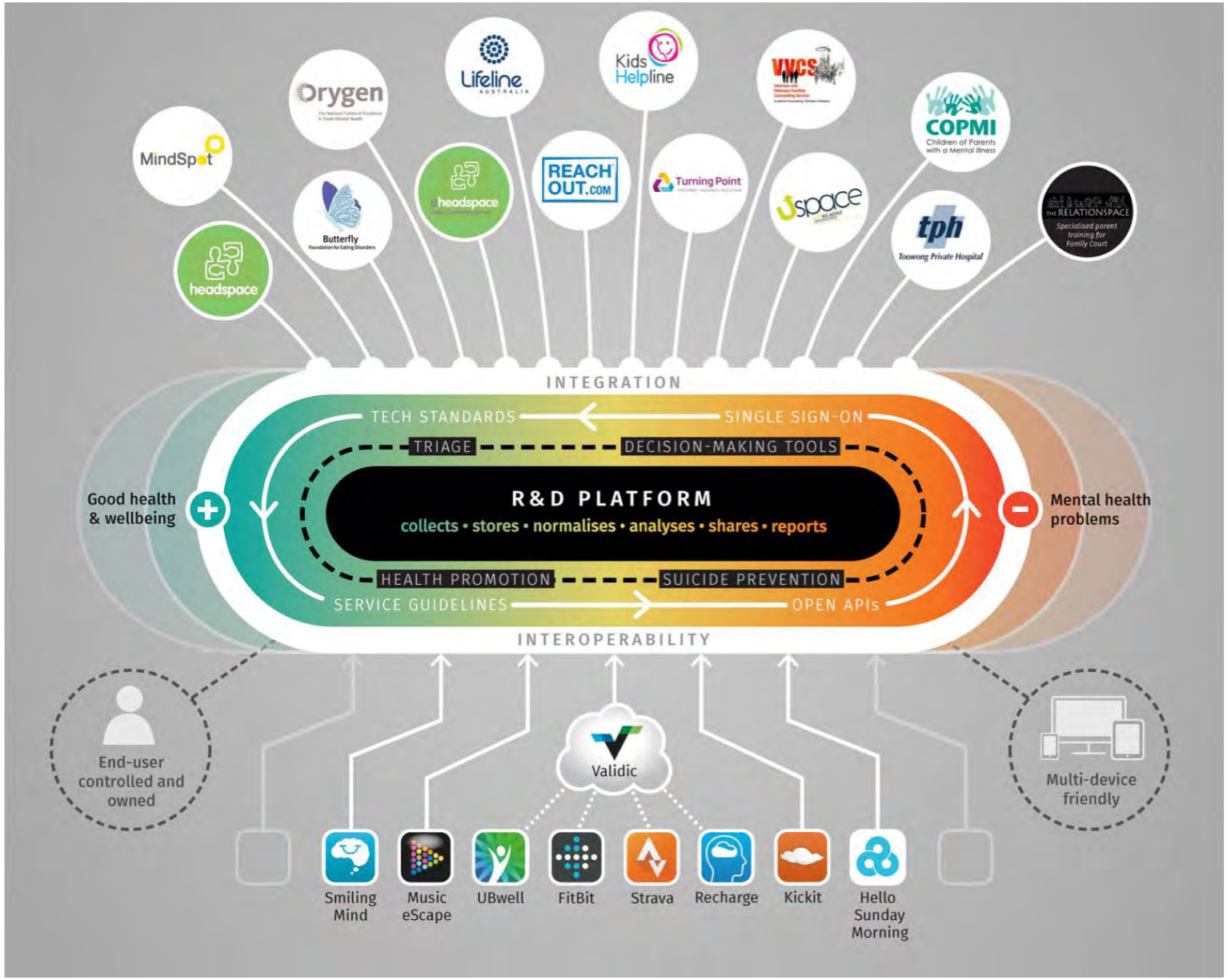
3. Implementing the Framework within enhanced primary-care based 'headspace' services



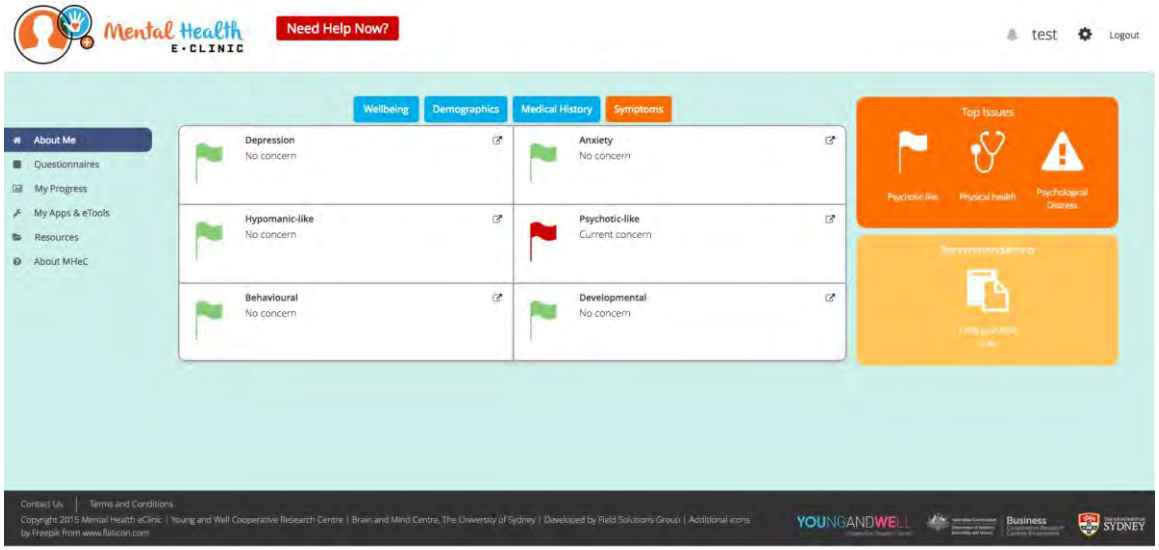
$40m Co-operative Research Centre for Young People, Technology and Wellbeing

1. Focusing on growing mental wealth!!

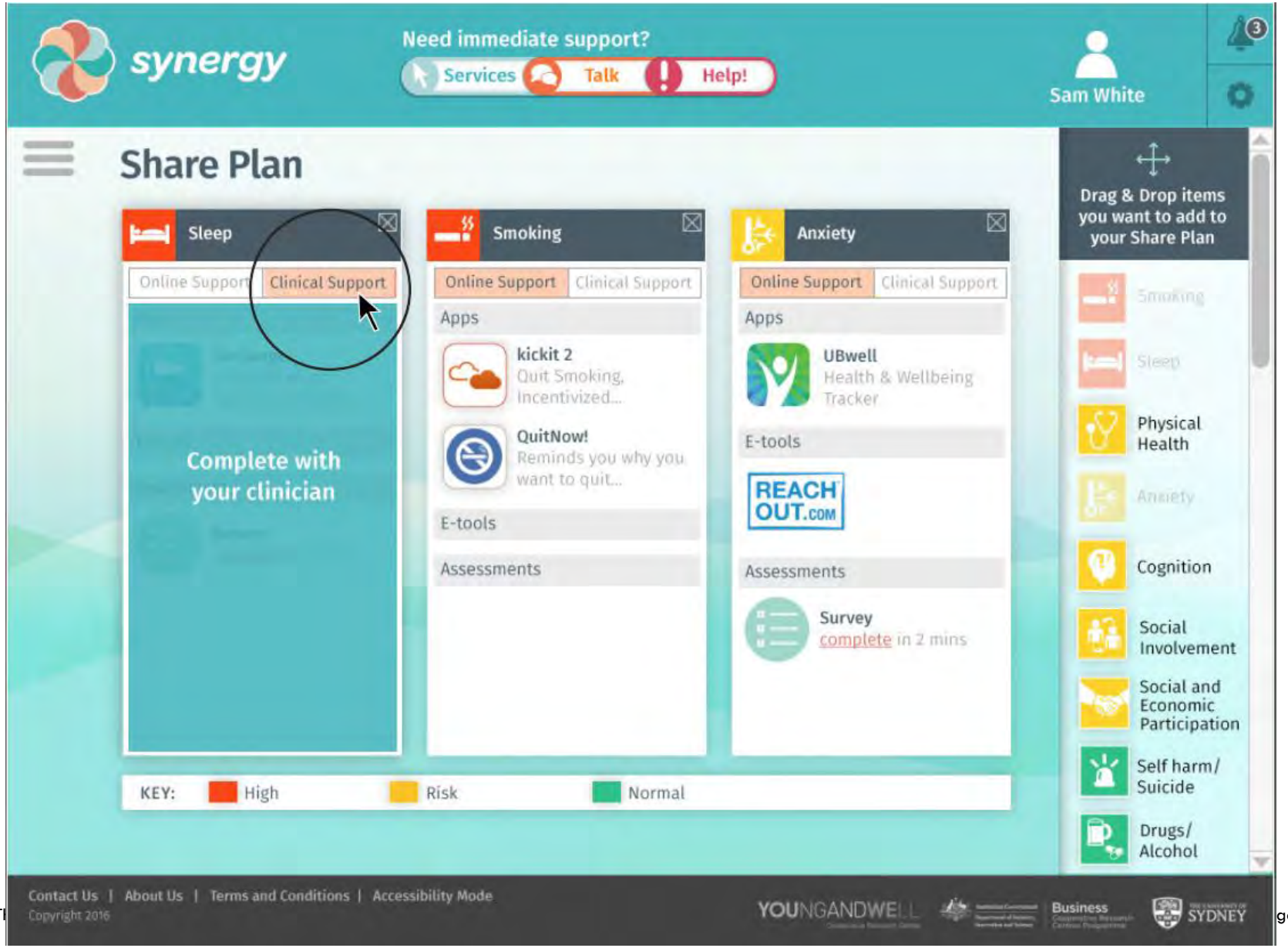
RIGHT CARE, RIGHT PLACE, FIRST TIME, EVERY TIME



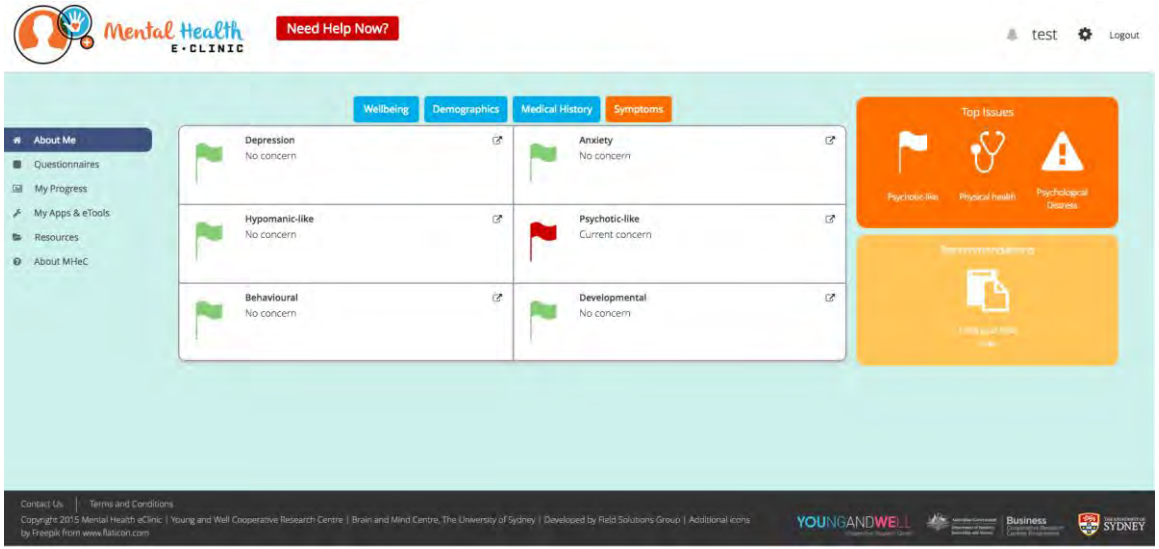
Mental Health eClinic: example dashboard of results



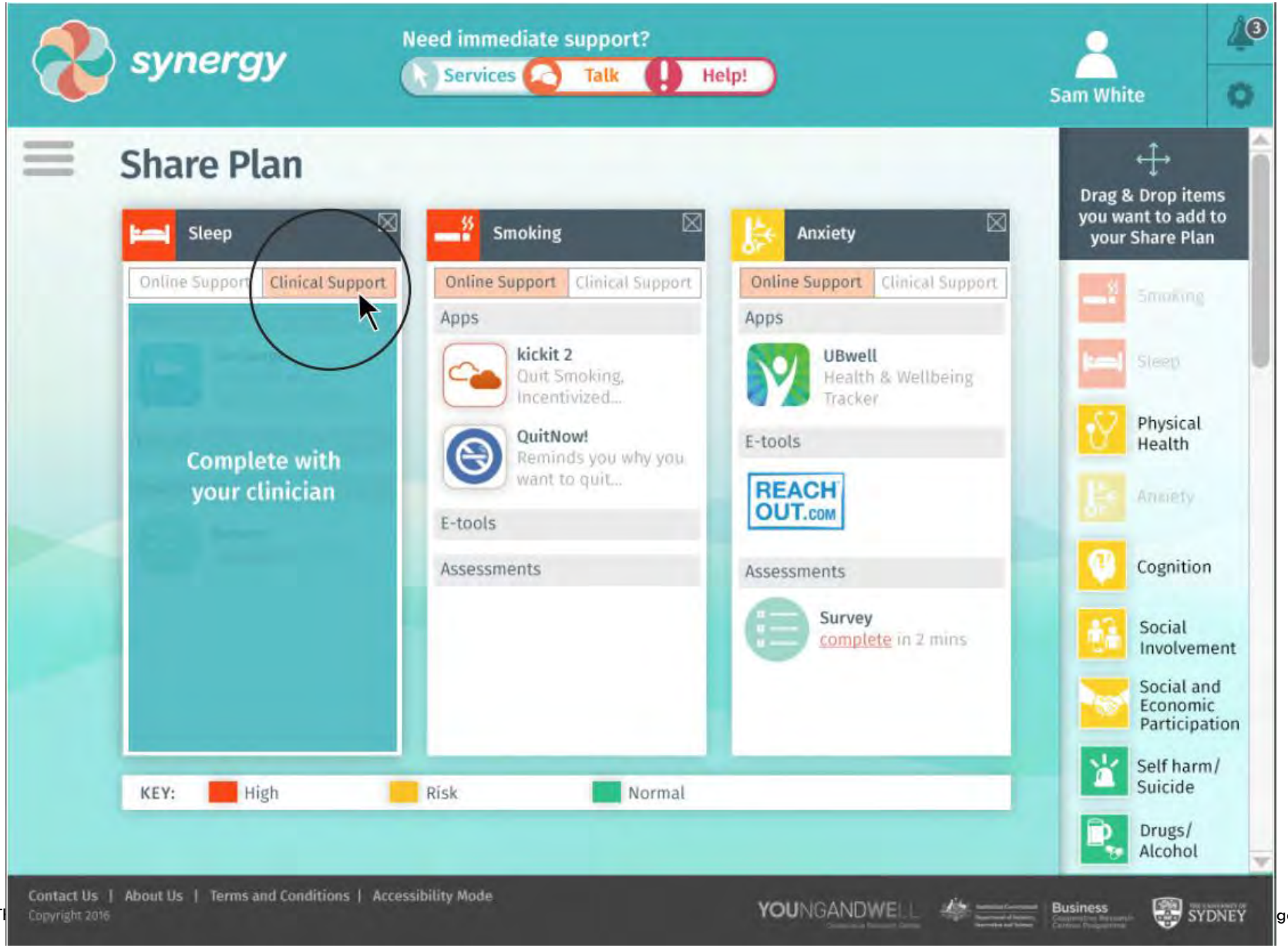
Share plan (decision tool) wireframe - clinical support



Mental Health eClinic: example dashboard of results



Share plan (decision tool) wireframe - clinical support



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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