

# Adolescent Substance Use & Mental Health

## Disentangling the interconnections

Dr Bobby Smyth



### Cannabis use causes damage to the memory

Jan Battles

had been using the drug for 5.7 years, had consumed it on 23 out of the previous 30 days but had abstained for roughly 15



THE IRISH TIMES Friday, January 4, 2008

### TRoubLED GENERATION: symptoms and solutions

◆ 92 per cent of young people drank alcohol and one-fifth had a serious problem.

◆ 22 per cent displayed a serious likelihood of having a clinical addiction to alcohol.

◆ 25 per cent had been in trouble with the law at some stage.

◆ 75 per cent of those who had been in trouble with the law were men.

◆ 43 per cent symptoms of

◆ 6 per cent intent.

◆ 83 per cent only 11 per more than o

◆ 98 per cent sought emo friends.



### State action on suicides 'blocked by drink lobby'

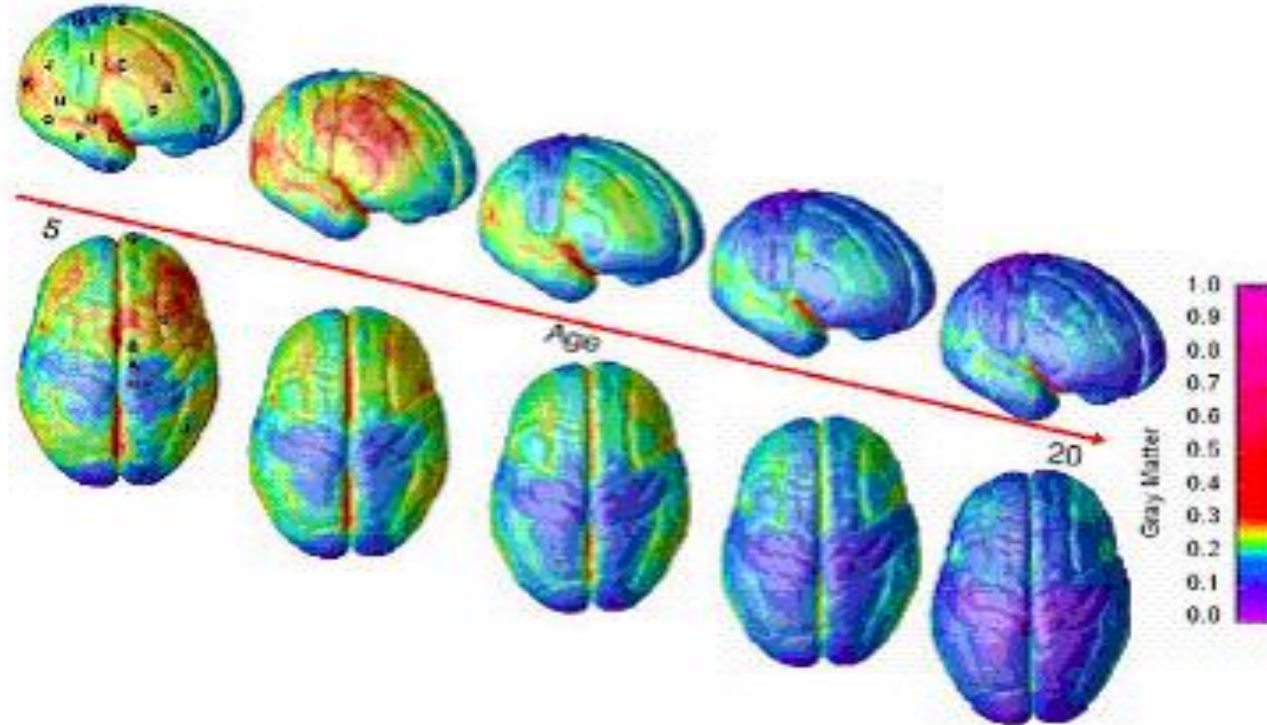
# Topics

- Adolescent Development
- Interaction between Mental Disorders and Addiction in adolescents
  - ADHD
  - Psychosis
  - Depression / anxiety
  - Suicide
- Treatment
- Implications

# The Adolescent brain – a work in progress

Giedd et al, 1999, Nature Neuroscience, 2, 861-863

<http://www.nimh.nih.gov/press/prbrainmaturing.cfm>



Red indicates more gray matter, blue less gray matter. Gray matter wanes in a back-to-front wave as the brain matures and neural connections are pruned. Areas performing more basic functions mature earlier; areas for higher order functions mature later. The prefrontal cortex, which handles reasoning and other "executive" functions, emerged late in evolution and is among the last to mature.





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March 2018



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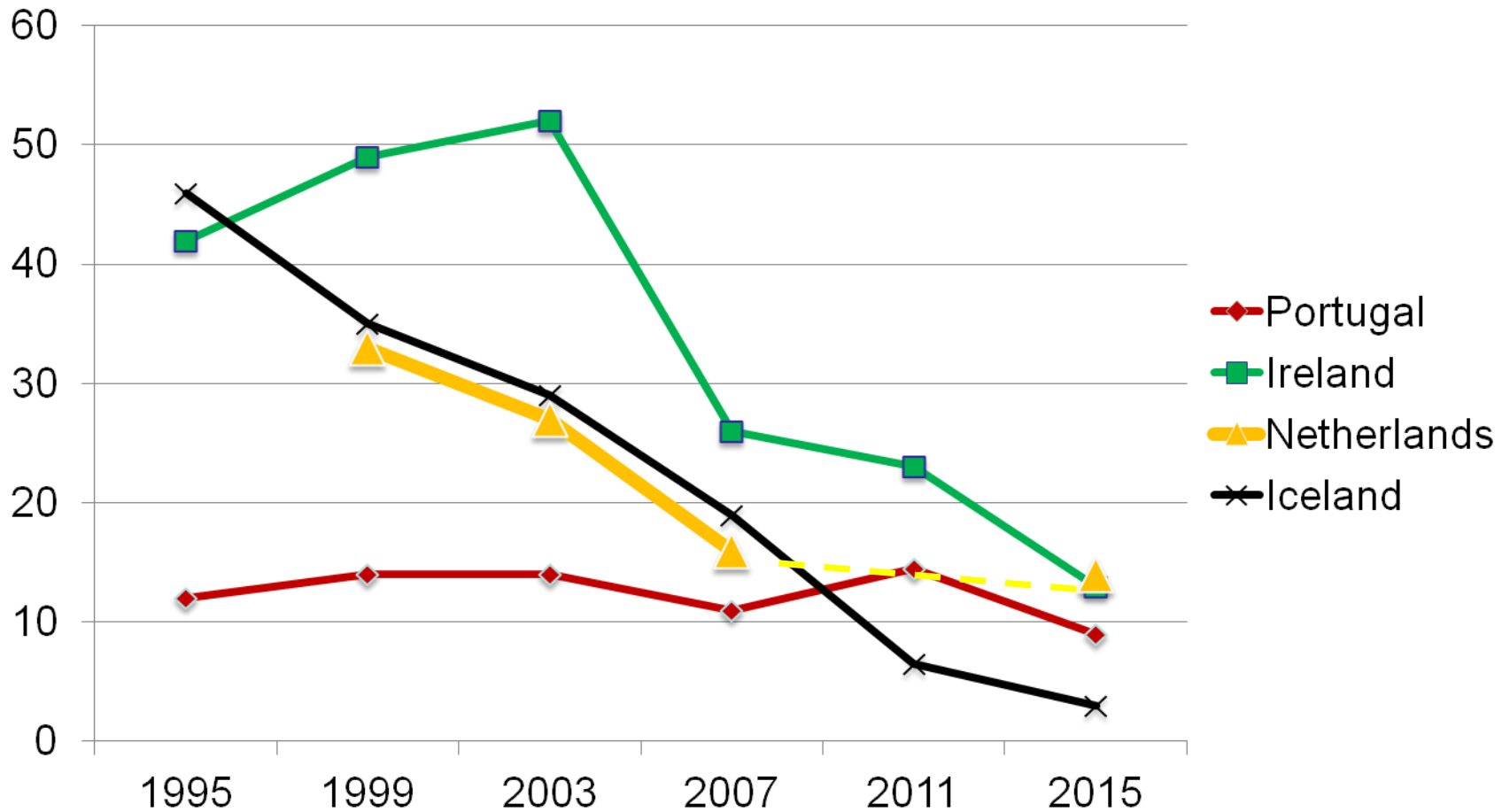
# Adolescent Development



Confidence ↔ Competence

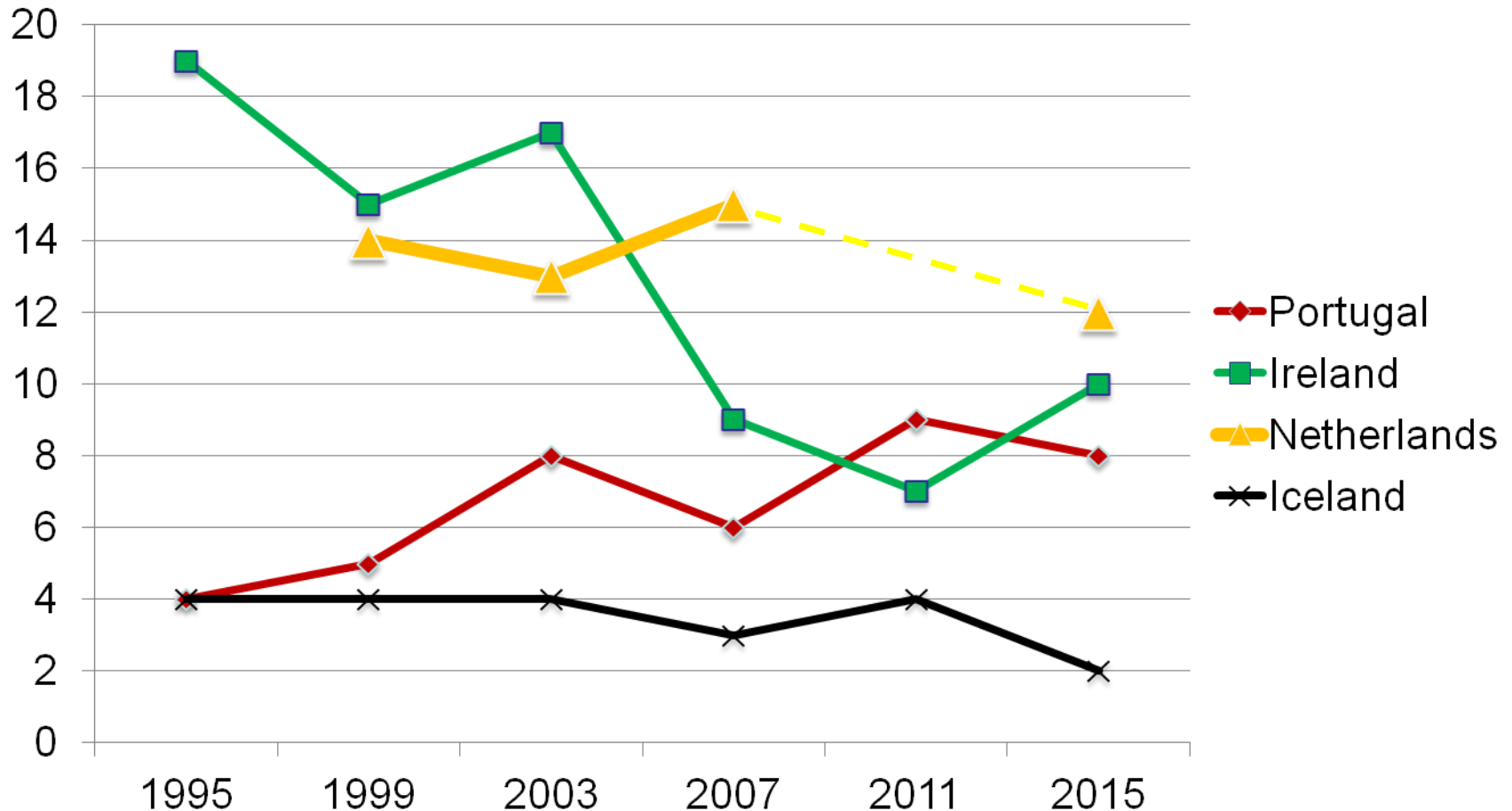
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# Past Month Drunkenness - ESPAD '95 to '15



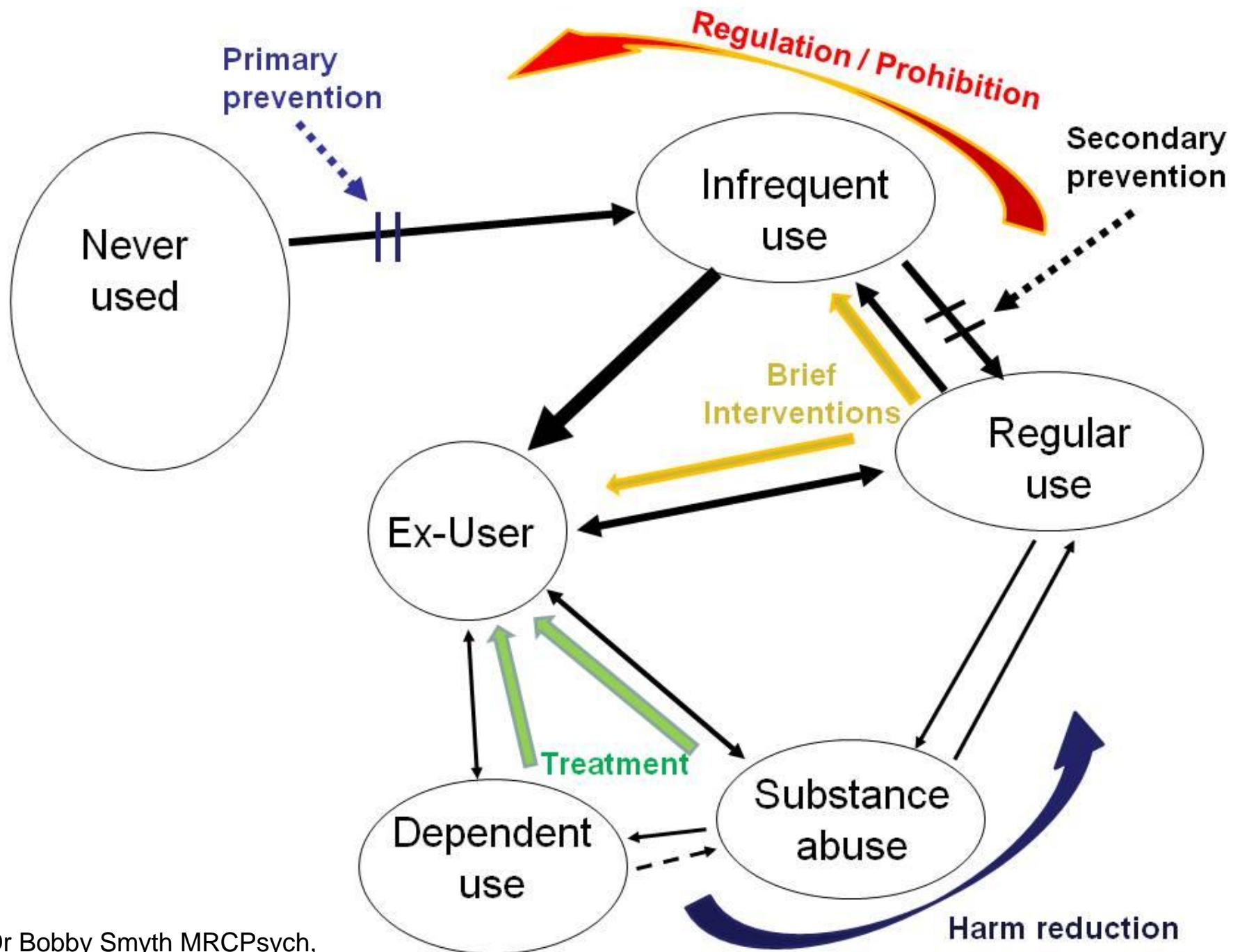
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# Past Month Cannabis Use- ESPAD '95 to '15

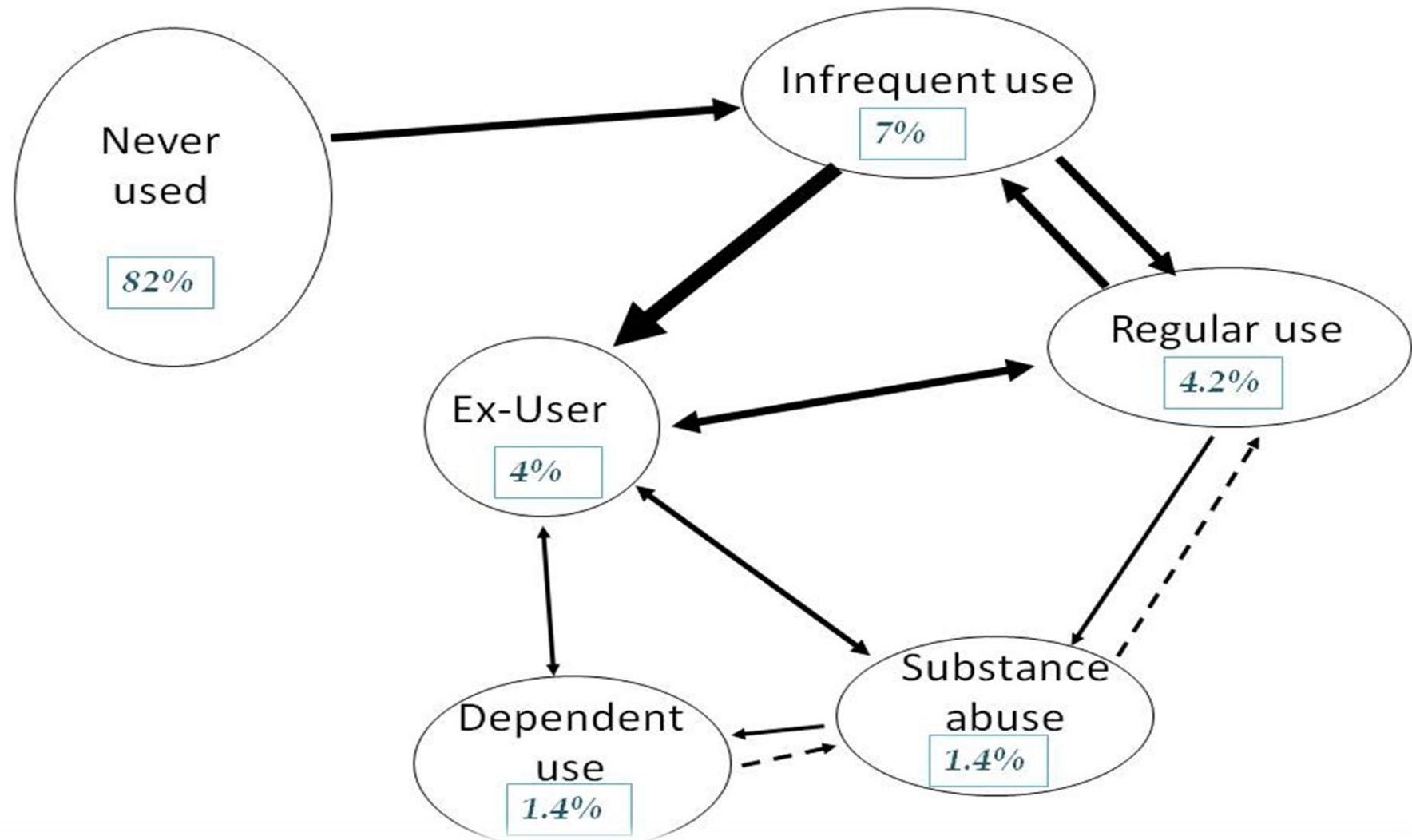


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# Cannabis among 16yo \_ESPAD 2011



**Drugs/Alcohol/**

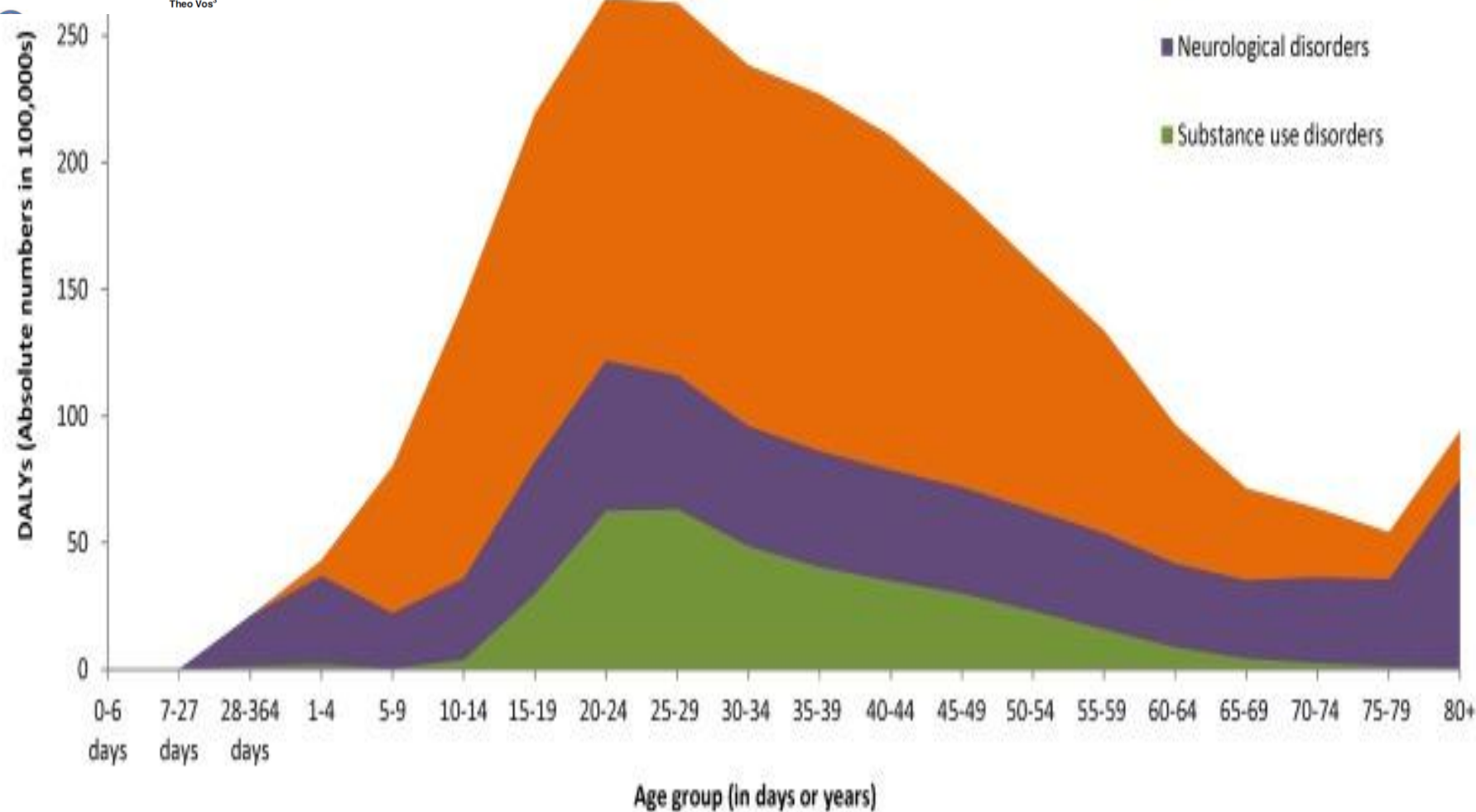
**MH Problem**

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## RESEARCH ARTICLE

# The Global Burden of Mental, Neurological and Substance Use Disorders: An Analysis from the Global Burden of Disease Study 2010

Harvey A. Whiteford<sup>1,2,3\*</sup>, Alize J. Ferrari<sup>1,2,3</sup>, Louisa Degenhardt<sup>3,4,5</sup>, Valery Feigin<sup>6</sup>, Theo Vos<sup>3</sup>



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Note: DALYs = disability-adjusted life years.





Contents lists available at SciVerse ScienceDirect

## Drug and Alcohol Dependence

journal homepage: [www.elsevier.com/locate/drugalcdep](http://www.elsevier.com/locate/drugalcdep)



### Review

## Prevalence of attention-deficit hyperactivity disorder in substance use disorder patients: A meta-analysis and meta-regression analysis

Katelijne van Emmerik-van Oortmerssen<sup>a,b,\*</sup>, Geurt van de Glind<sup>c</sup>, Wim van den Brink<sup>b</sup>, Filip Smit<sup>c,d</sup>, Cleo L. Crunelle<sup>b,e</sup>, Marije Swets<sup>a</sup>, Robert A. Schoevers<sup>f,a</sup>

- Adolescents 25.3% (C.I. 20.0–31.4%)
- Adults 21.0% (C.I. 15.9–27.2%)

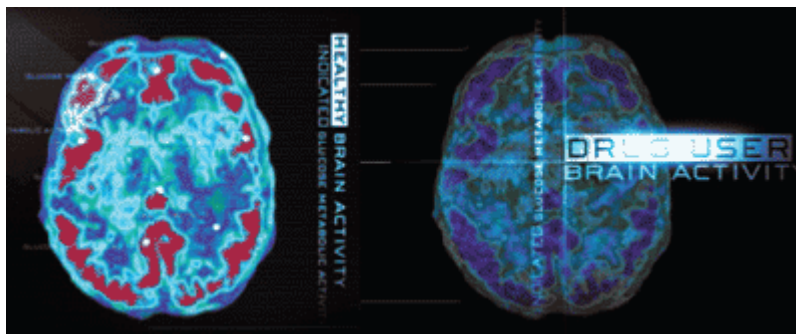
# ADHD & Substance use

- SUD (22%) common in ADHD teens
- Treated ADHD in childhood reduces risk of later development of SUD



Kollins SH (2008) ADHD, Substance use disorders, and psychostimulant treatment. J Attent Disorders, 12; 115-125

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Zeigler DW et al (2004)

**"Underage alcohol is associated with brain damage and neurocognitive deficits**, with implication for learning and intellectual development"

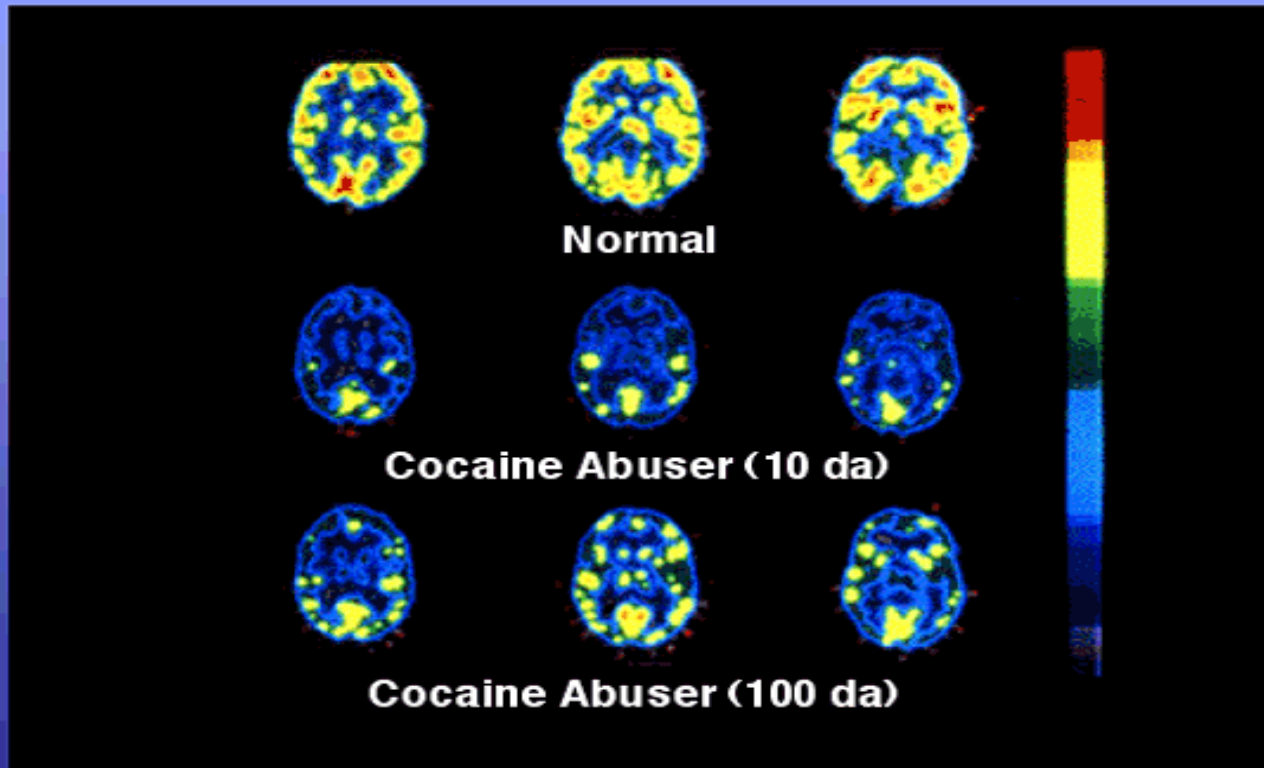
Casey & Jones (2010)

"Many studies have reported altered brain structure and function in alcohol dependent or abusing adolescents..... smaller frontal & hippocampal volumes.....suggesting that **early adolescence may be a period of heightened risk to alcohol's neurotoxic effects**"

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# Delayed recovery after abstinence

## Your Brain After Drugs





## Reviews and Overviews

# The Neural Basis of Addiction: A Pathology of Motivation and Choice

Peter W. Kalivas, Ph.D.

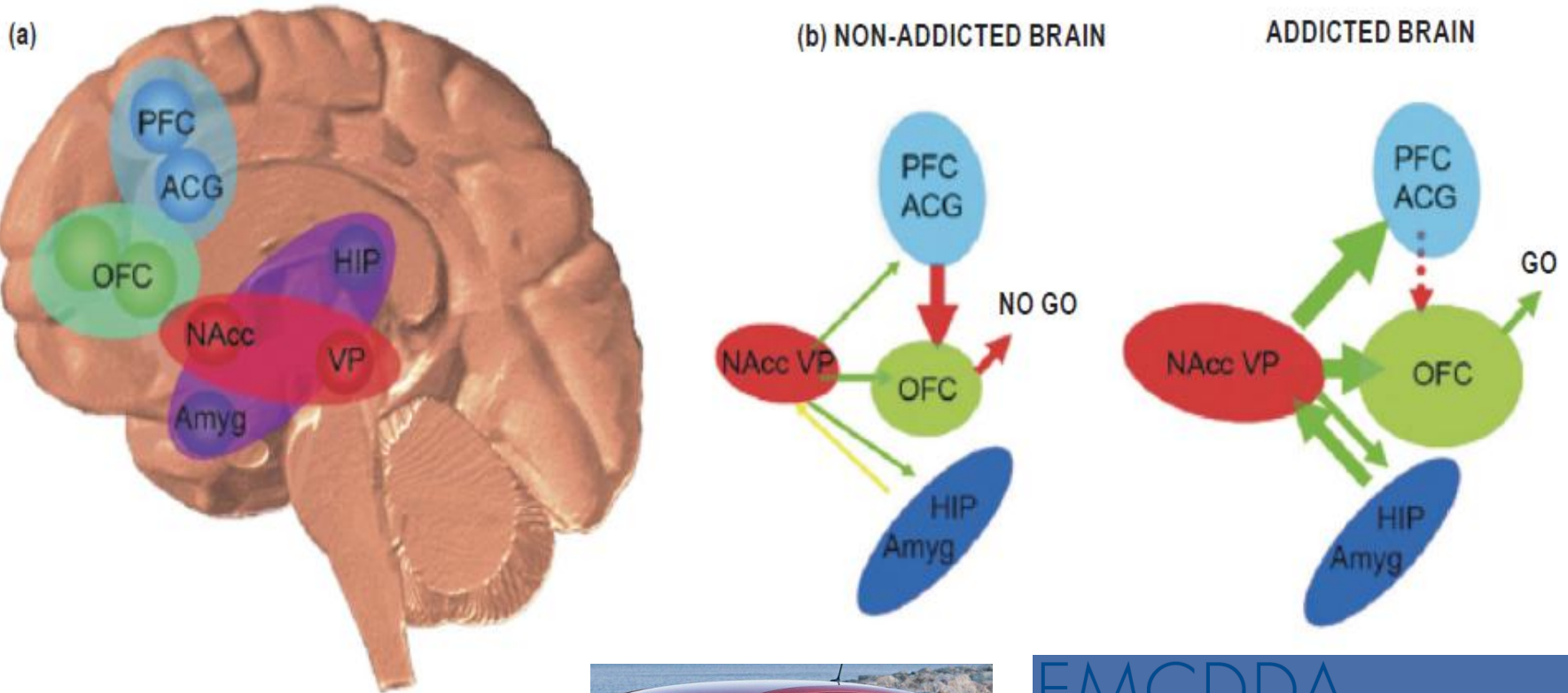
Nora D. Volkow, M.D.

**Objective:** A primary behavioral pathology in drug addiction is the overpowering motivational strength and decreased ability to control the desire to obtain drugs. In

physiological plasticity in excitatory transmission reduces the capacity of the prefrontal cortex to initiate behaviors in response to biological rewards and to pro-

American Journal of Psychiatry (2005), 162: 1403-1413

# Brain Plasticity - Craving



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ORIGINAL ARTICLE

## Altered resting-state connectivity in adolescent cannabis users

Catherine Orr, PhD<sup>1</sup>, Rowen Morioka, BA<sup>2</sup>, Brendan Behan, PhD<sup>3</sup>, Sameer Datwani, MSc<sup>3</sup>, Marika Doucet, MSc<sup>3</sup>, Jelena Ivanovic, MSc<sup>3</sup>, Clare Kelly<sup>4</sup>, Karen Weierstall, PhD<sup>1</sup>, Richard Watts, PhD<sup>5</sup>, Bobby Smyth, MRCPsych<sup>6</sup>, and Hugh Garavan, PhD<sup>1,2</sup>

Neuropharmacology xxx (2013) 1–7



Contents lists available at SciVerse ScienceDirect

Neuropharmacology

journal homepage: [www.elsevier.com/locate/neuropharm](http://www.elsevier.com/locate/neuropharm)

## Response inhibition and elevated parietal-cerebellar correlations in chronic adolescent cannabis users

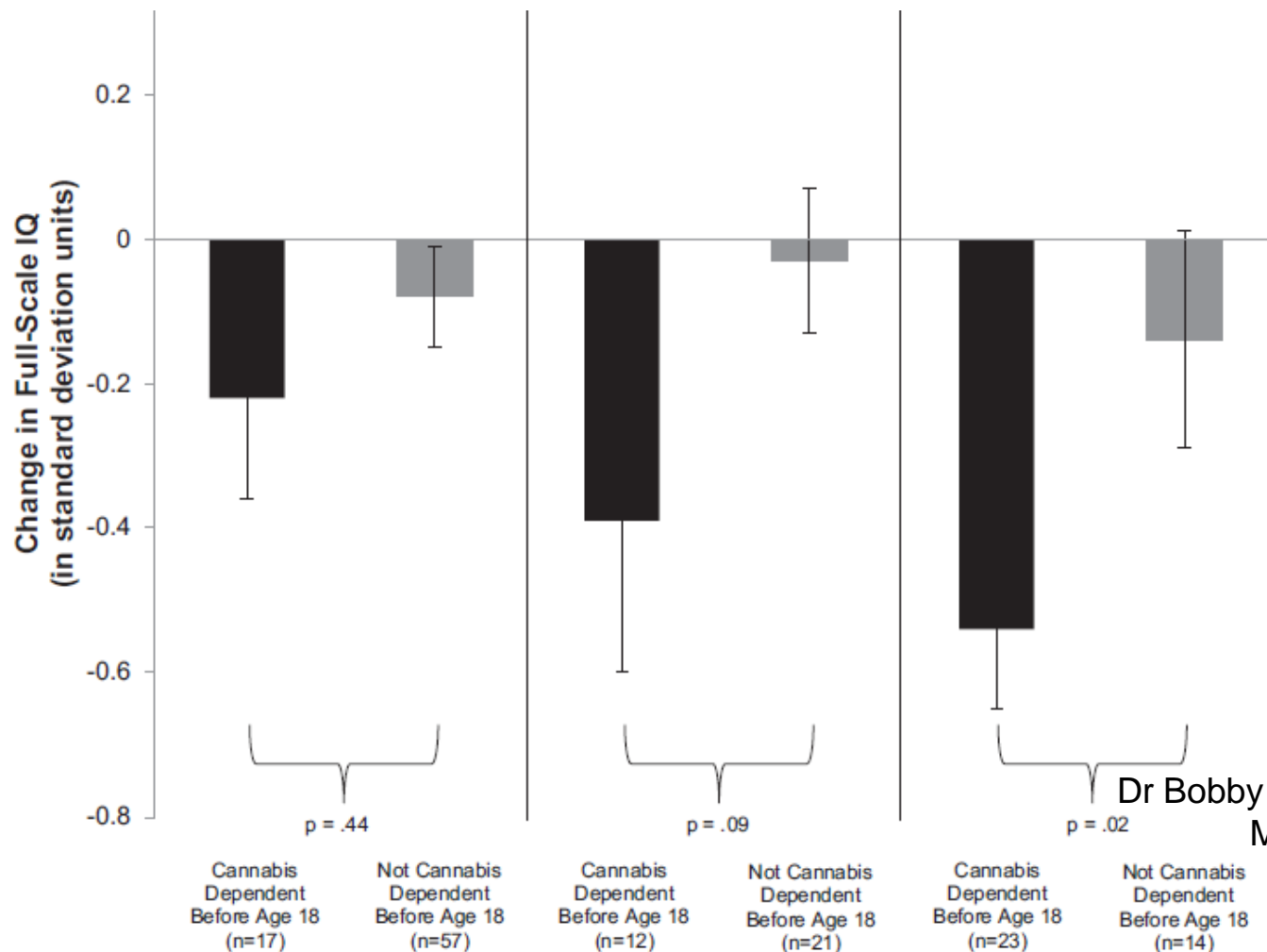
B. Behan<sup>a</sup>, C.G. Connolly<sup>b</sup>, S. Datwani<sup>a</sup>, M. Doucet<sup>a</sup>, J. Ivanovic<sup>a</sup>, R. Morioka<sup>c,d</sup>, A. Stone<sup>a</sup>,  
R. Watts<sup>e</sup>, B. Smyth<sup>f,g</sup>, H. Garavan<sup>a,c,d,\*</sup>

Dr Bobby Smyth MRCPsych, March 2018

<sup>a</sup>School of Psychology, Trinity College, Institute of Neuroscience, Trinity College, Dublin, Dublin 2, Ireland

# Persistent cannabis users show neuropsychological decline from childhood to midlife

Madeline H. Meier<sup>a,b,1</sup>, Avshalom Caspi<sup>a,b,c,d,e</sup>, Antony Ambler<sup>e,f</sup>, HonaLee Harrington<sup>b,c,d</sup>, Renate Houts<sup>b,c,d</sup>, Richard S. E. Keefe<sup>d</sup>, Kay McDonald<sup>f</sup>, Aimee Ward<sup>f</sup>, Richie Poulton<sup>f</sup>, and Terrie E. Moffitt<sup>a,b,c,d,e</sup>



Dr Bobby Smyth MRCPsych,  
March 2018



# Traditional marijuana, high-potency cannabis and synthetic cannabinoids: increasing risk for psychosis

Robin M. Murray, Harriet Quigley, Diego Quattrone, Amir Englund, Marta Di Forti

Institute of Psychiatry, Psychology and Neuroscience, King's College, De Crespigny Park, London, SE5

*(World Psychiatry 2016;15:195–204)*



*“Epidemiological evidence demonstrates that cannabis use is associated with an increased risk of psychotic outcomes, and confirms a dose response relationship between the level of use and the risk of later psychosis.”*

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# Gene-Environment Interactions?

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## **Moderation of the Effect of Adolescent-Onset Cannabis Use on Adult Psychosis by a Functional Polymorphism in the Catechol-O-Methyltransferase Gene: Longitudinal Evidence of a Gene X Environment Interaction**

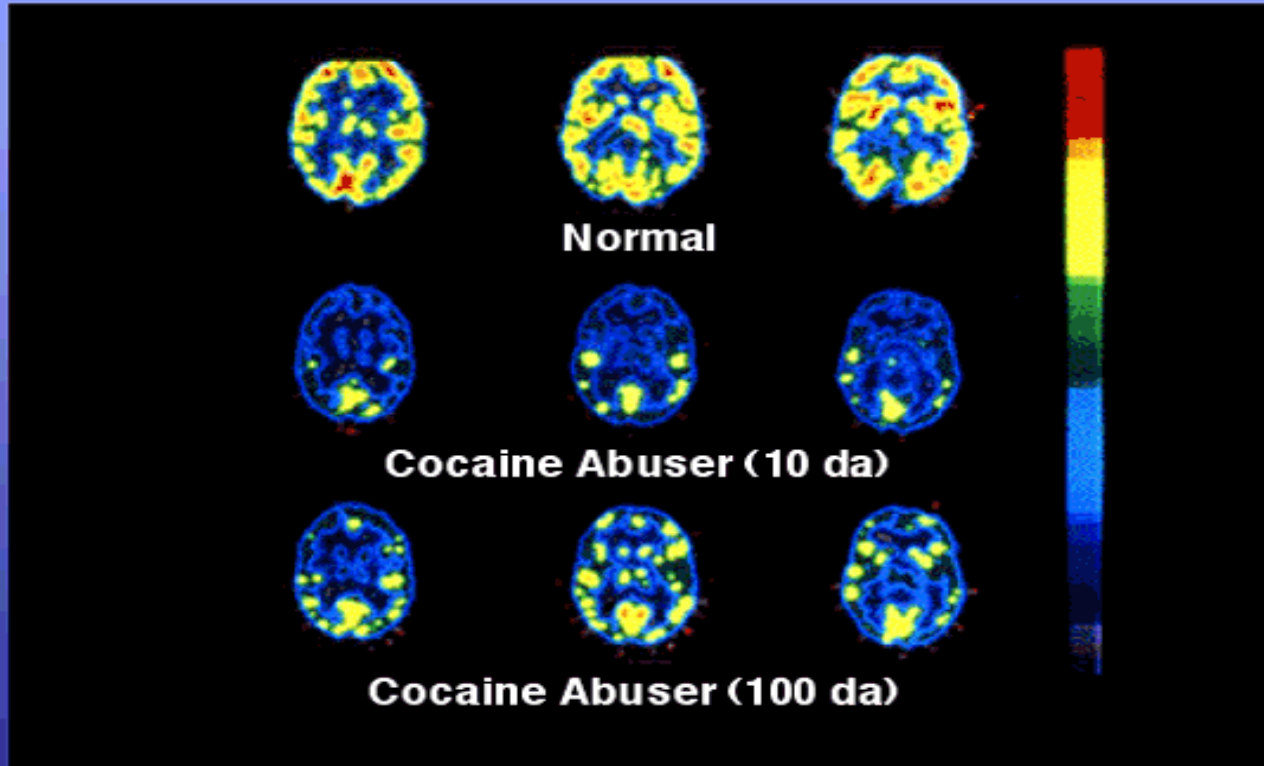
Avshalom Caspi, Terrie E. Moffitt, Mary Cannon, Joseph McClay, Robin Murray, HonaLee Harrington, Alan Taylor, Louise Arseneault, Ben Williams, Antony Braithwaite, Richie Poulton, and Ian W. Craig

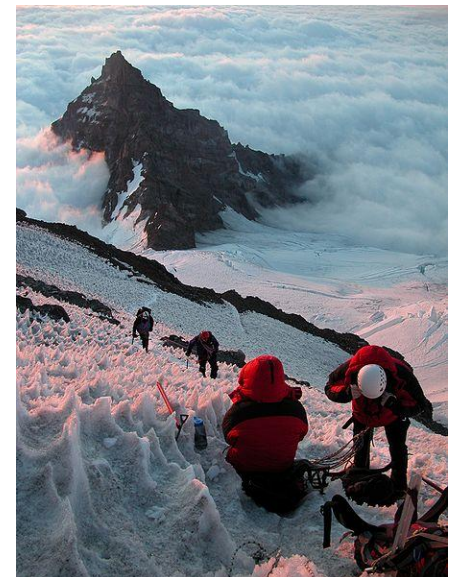
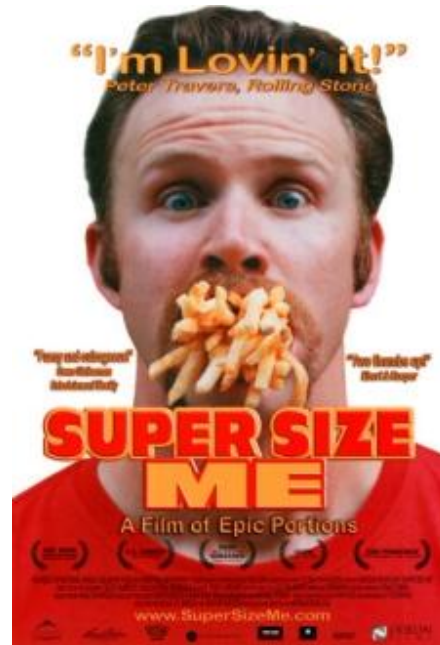
BIOL PSYCHIATRY 2005;57:1117–1127

© 2005 Society of Biological Psychiatry

# Delayed recovery after abstinence

## Your Brain After Drugs







# NPS & mental health

## Whack induced psychosis: A case series



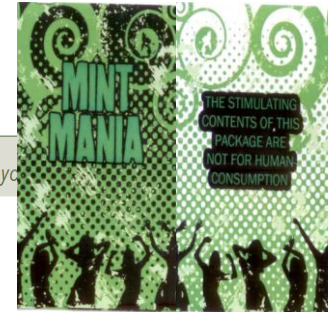
ELSEVIER

Contents lists available at [ScienceDirect](http://ScienceDirect)

Schizophrenia Research

journal homepage: [www.elsevier.com/locate/schres](http://www.elsevier.com/locate/schres)

Emam El-Higaya, Mohamed Ahmed, Brian



The synthetic cannabinoid Spice as a trigger for an acute exacerbation of cannabis induced recurrent psychotic episodes

Helge Müller\*, Wolfgang Sperling, Martin Köhrmann, Hagen B. Huttner, Johannes Kornhuber, Juan-Manuel Maler

Department of Psychiatry and Psychotherapy, University of Erlangen-Nuremberg, Germany

**Risk of emergency medical treatment following consumption of cannabis or synthetic cannabinoids in a large global sample**

Adam Winstock<sup>1</sup>, Michael Lynskey<sup>1</sup>, Rohan Borschmann<sup>1</sup> and Jon Waldron<sup>2</sup>

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March 2018

Psychopharm

*Journal of Psychopharmacology*

1–6

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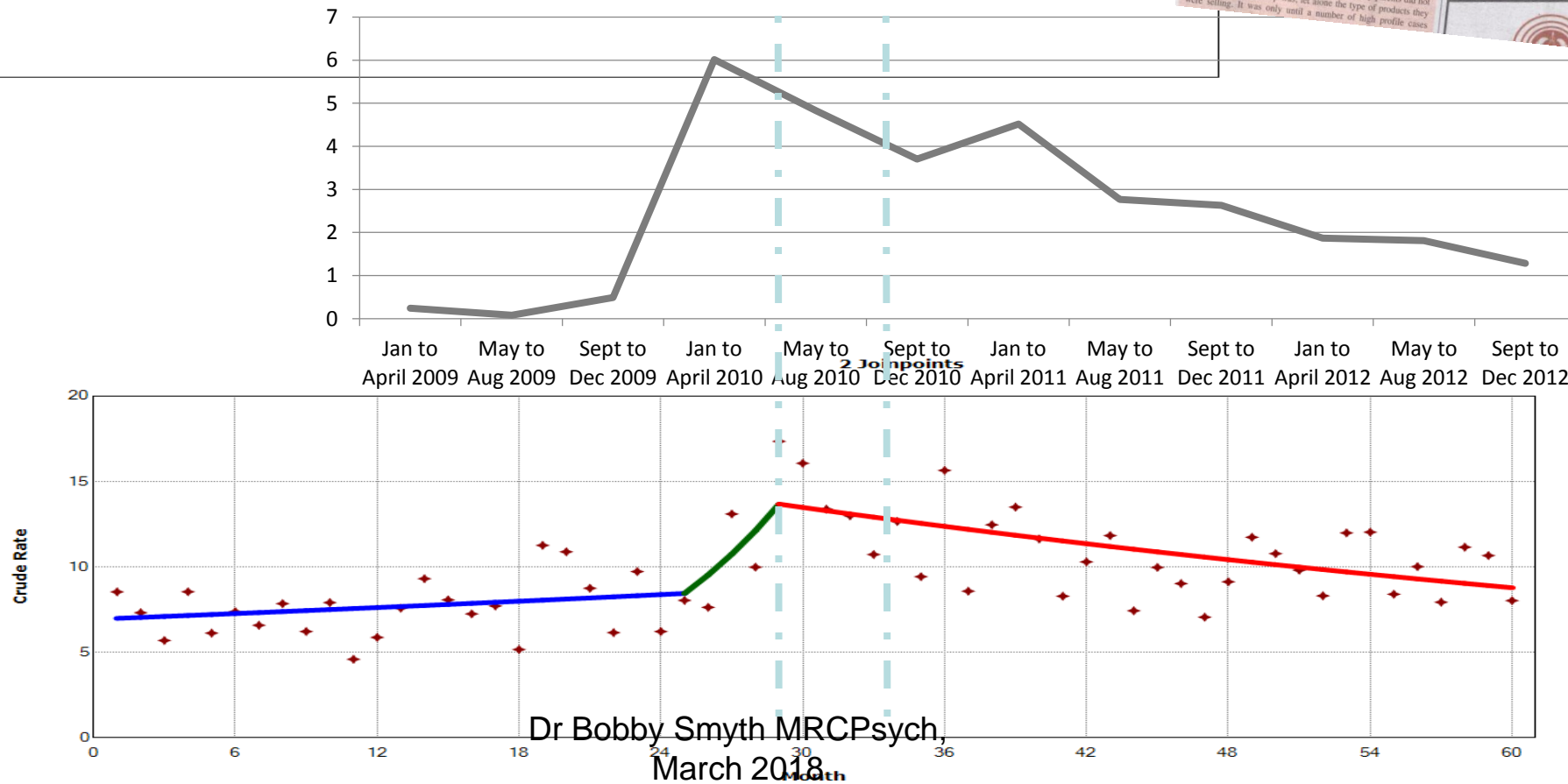
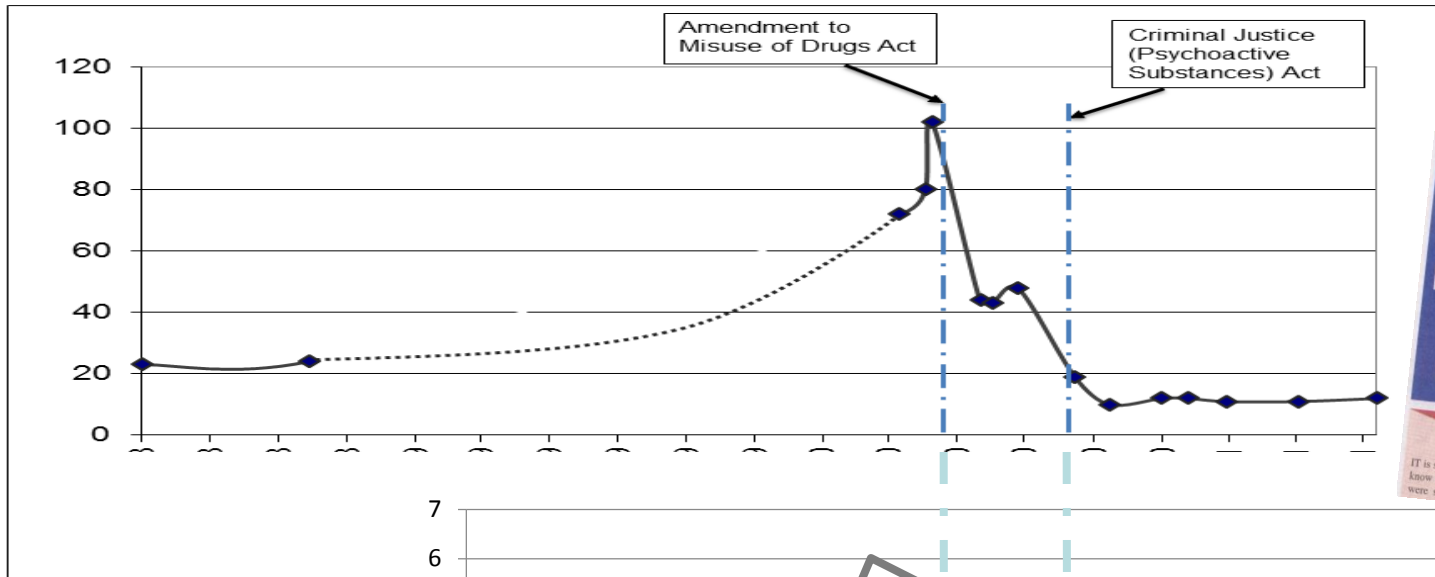
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DOI: 10.1177/0269881115574493

[jop.sagepub.com](http://jop.sagepub.com)



Symptom	N	%
Panic and anxiety	17	81.0
Paranoia	13	61.9
Scared	13	61.9
Agitation	10	47.6
Breathlessness	8	38.1
Sweating	8	38.1
Auditory hallucinations	7	33.3



# Drug Induced Psychosis

- Intoxication mimicking psychosis
  - Stimulants, cannabis, XTC, LSD, solvents
- Psychotic reactions
  - Stimulants, cannabis
- Flashbacks
  - LSD, cannabis, XTC
- Drug induced relapse
  - Stimulants, cannabis
- Withdrawal states
  - Barbiturates, benzos, alcohol



Resolution: 4000x3000 px  
Price format: 20.00, download  
www.gettyimages.com



# “Doctor, I’m terribly paranoid.....”

Drug and Alcohol Dependence 124 (2012) 128–134



Contents lists available at SciVerse ScienceDirect

## Drug and Alcohol Dependence

journal homepage: [www.elsevier.com/locate/drugalcdep](http://www.elsevier.com/locate/drugalcdep)



### The relationship between cannabis use disorders and social anxiety disorder in the National Epidemiological Study of Alcohol and Related Conditions (NESARC)

Julia D. Buckner<sup>a,\*</sup>, Richard G. Heimberg<sup>b</sup>, Franklin R. Schneier<sup>c</sup>, Shang-Min Liu<sup>c</sup>, Shuai Wang<sup>c</sup>, Carlos Blanco<sup>c</sup>

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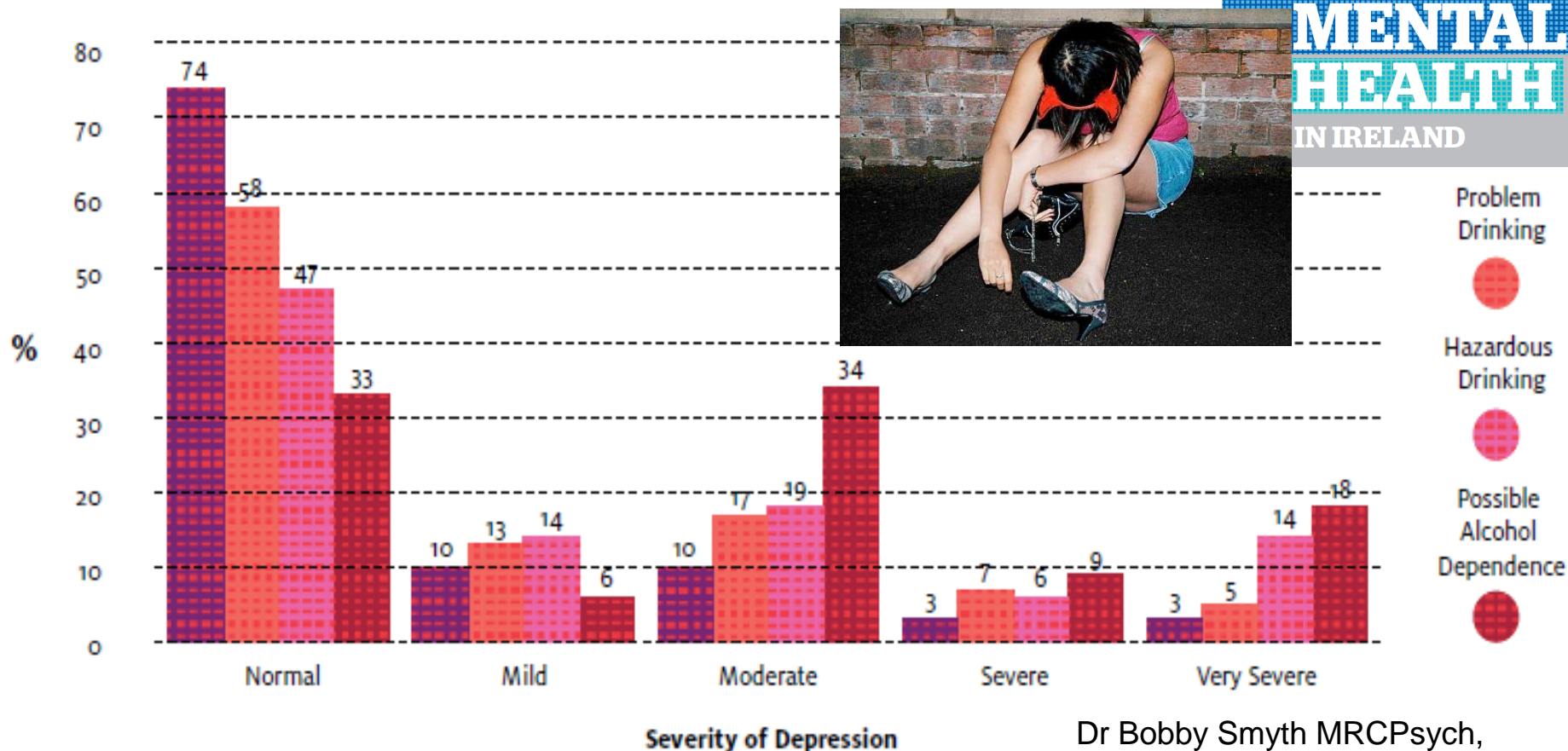


# Teens, Alcohol and Depression

MY  
WORLD  
SURVEY

NATIONAL  
STUDY OF  
YOUTH  
MENTAL  
HEALTH  
IN IRELAND

Figure 4.28: Depressive symptoms by alcohol behaviour

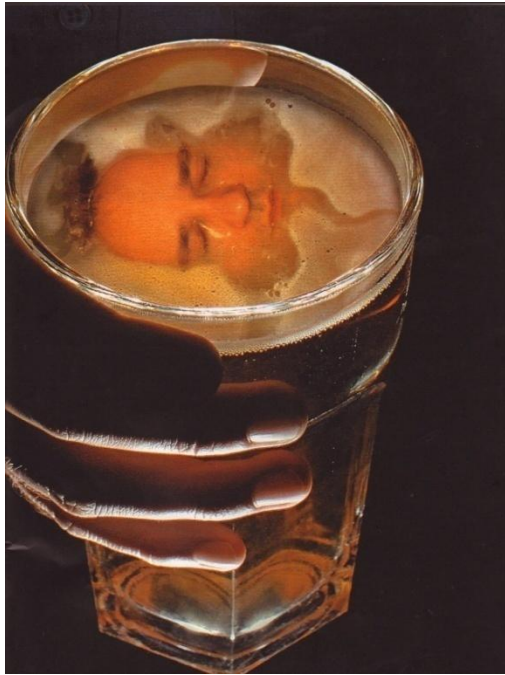


# Learning which shoulder to cry on.....



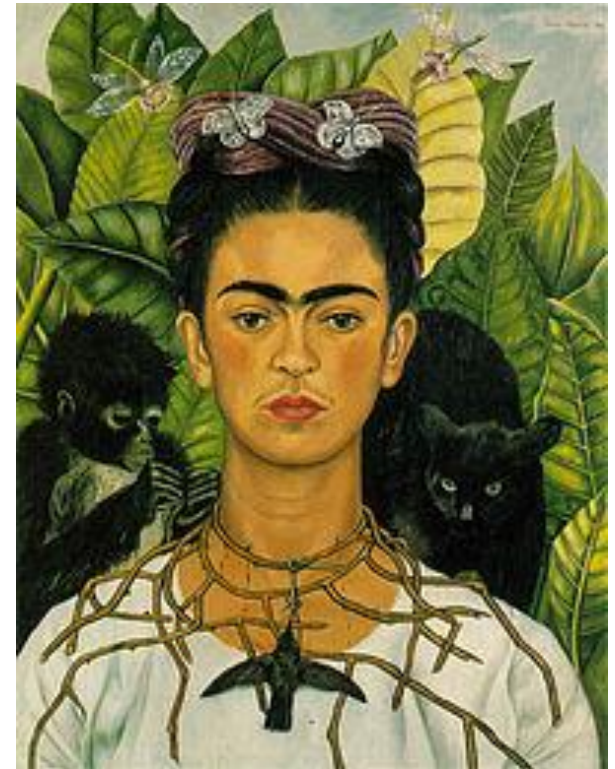
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*“I tried to drown my sorrows, but the bastards learned how to swim”*

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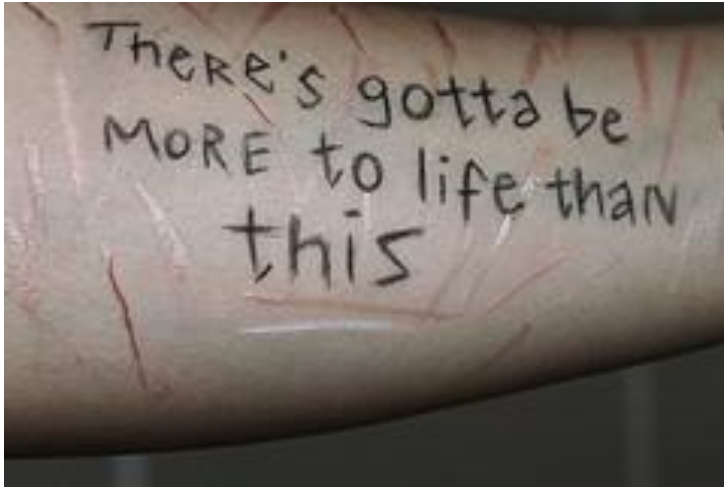
Frida Kahlo  
1907-1954

- In NorthEast

- 58% of young people who died by suicide were very drunk (i.e. BAC >160mg%)
- Bedford et al (2006). Blood alcohol levels in persons who died from accidents and suicide. *Irish Medical Journal*, 99(3), 80-82.

- In South

- 40% of all deaths by hanging revealed alcohol use, with mean BAC=200mg%
- Bellis M, Bolster MA & Doyle CT. (2009) The Role of Alcohol in Deaths Presenting to the Coroner's Service in Cork City & County. *Irish Medical Journal*, 102, 13-15.



## Action Areas

### 14 ALCOHOL AND SUBSTANCE ABUSE

To challenge permissive, harmful attitudes to alcohol abuse, help to reduce overall consumption rates and raise awareness of the association between alcohol and/or substance abuse and suicidal behaviour.

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## Connecting for Life

Goal 3: To target approaches to reduce suicidal behaviour and improve mental health among priority groups

### Objectives

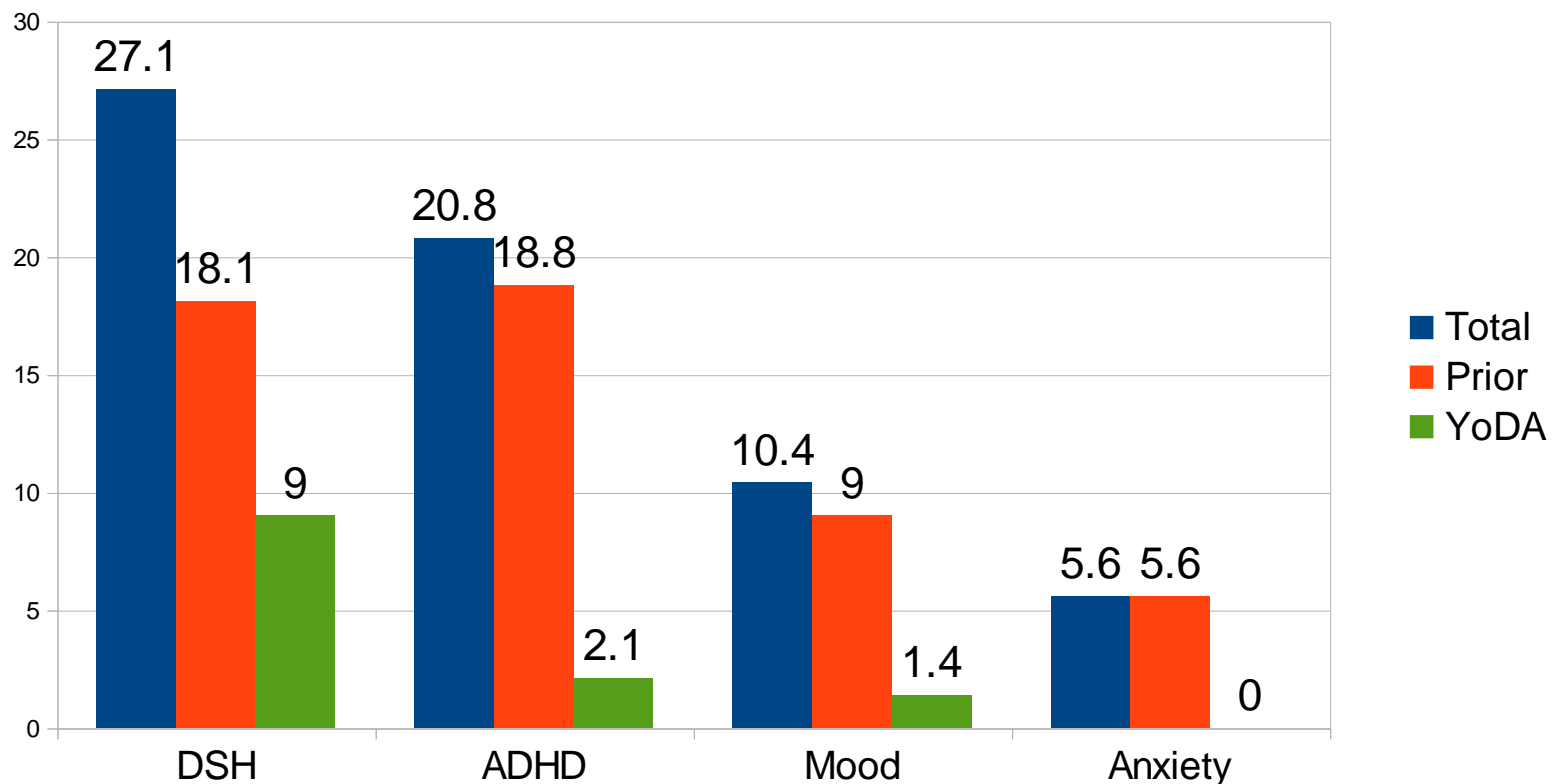
**3.2** Support, in relation to suicide prevention, the Substance Misuse Strategy, to address the high rate of alcohol and drug misuse.

**11.4** Build the link between alcohol/drug misuse and suicidal behaviour into all communication campaigns.

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**3.2.1** Continue the roll out of programmes aimed at early intervention and prevention of alcohol and drug misuse in conjunction with HSE Primary Care.

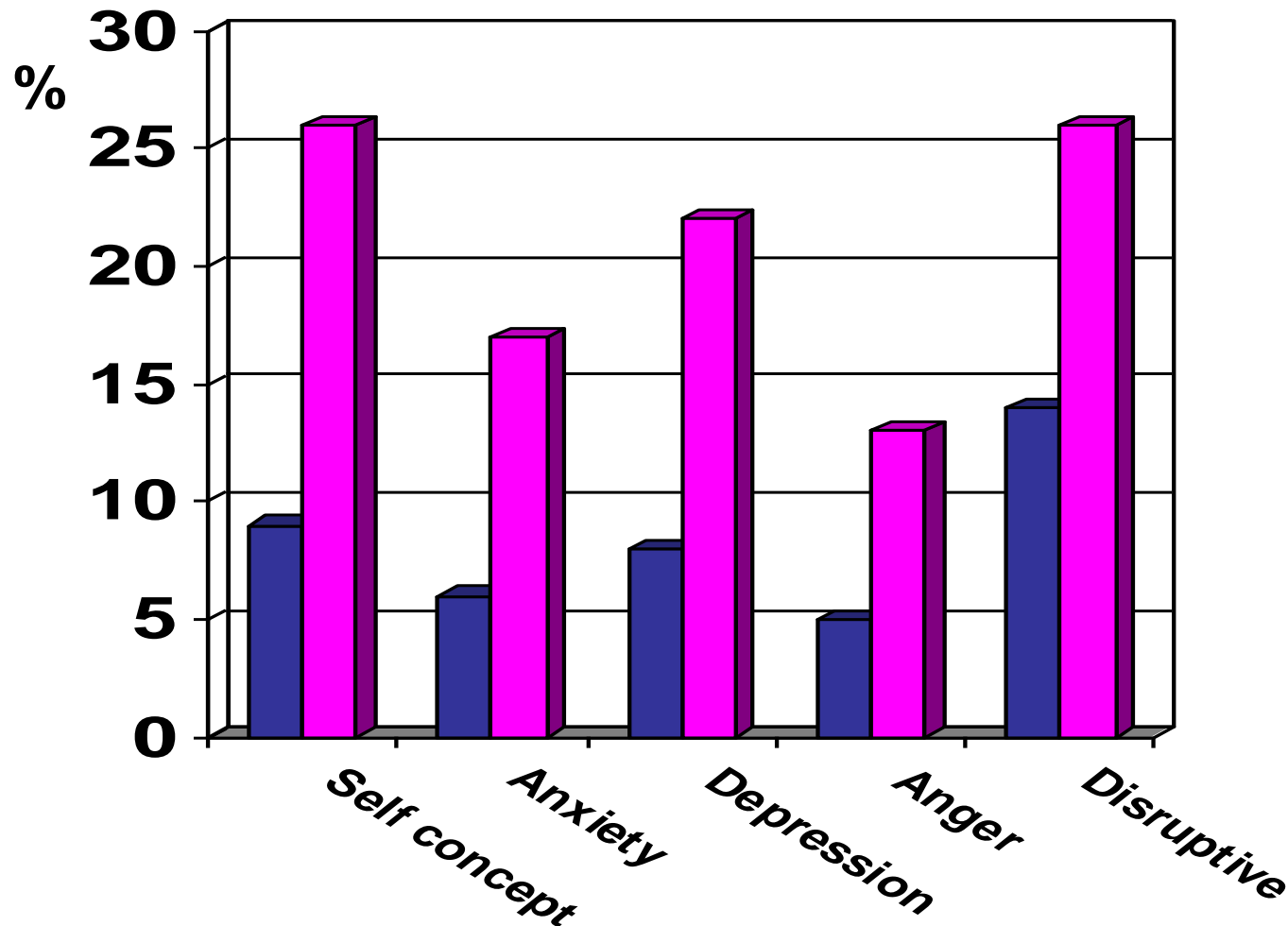
# Dual Diagnosis in YoDA\*



- Conduct disorder is clearly under-diagnosed in this group.
- International research indicates rates of dual diagnosis in 30-80% of adolescents with substance use disorders.

\*James PD, Apantaku-Olajide T, Smyth BP. *Mental Health and Substance Use* (2012), 1–9, iFirst article

# Psychological problems more common in girls (n=88)



Edokpolo et al  
(2010), *Journal  
of Psychoactive  
Drugs*, 42: 31-36

# The pros & the cons.....





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# Family

## We are living in fear of our 15-year-old son

### Ask the expert

**Declan Coogan**

Queries: [health@irishtimes.com](mailto:health@irishtimes.com)

**Q** I have been putting off writing about this for a year or so. But we're at the end of our tether. We have three children, all boys, aged 17, 15 and seven. We have never had any trouble with any of the boys growing up. Our children are well liked and people tell us how lucky we are. And we are – to an extent.

The trouble starts once we close our front door. Our 15-year-old son has us living in fear. He rules the roost in our house. He bullies us – shouting and roaring at us. He makes constant demands for money and for lifts into town. He has to get what he wants when

of problem (often because they think they are the only ones living with it and because they feel hopeless).

Sometimes practitioners working with children and families are unsure about how best to advise parents because it seems to be a relatively new problem and because there is no clear pathway for help in Ireland.

Sometimes other family members want to help when they hear about it but offer the kind of assistance parents wouldn't like and which would not be helpful, such as threatening to teach the child a lesson.

Conflict between parents and children is expected as part of children developing their own identities and developing conflict-resolution skills. But in some families the ways of managing parent-child conflict have led to situations where parents are living in fear of their child.

This leads to constant tension and a



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# Responding to the problem of 'parent abuse'

Amanda Holt asks whether there is a role for psychology

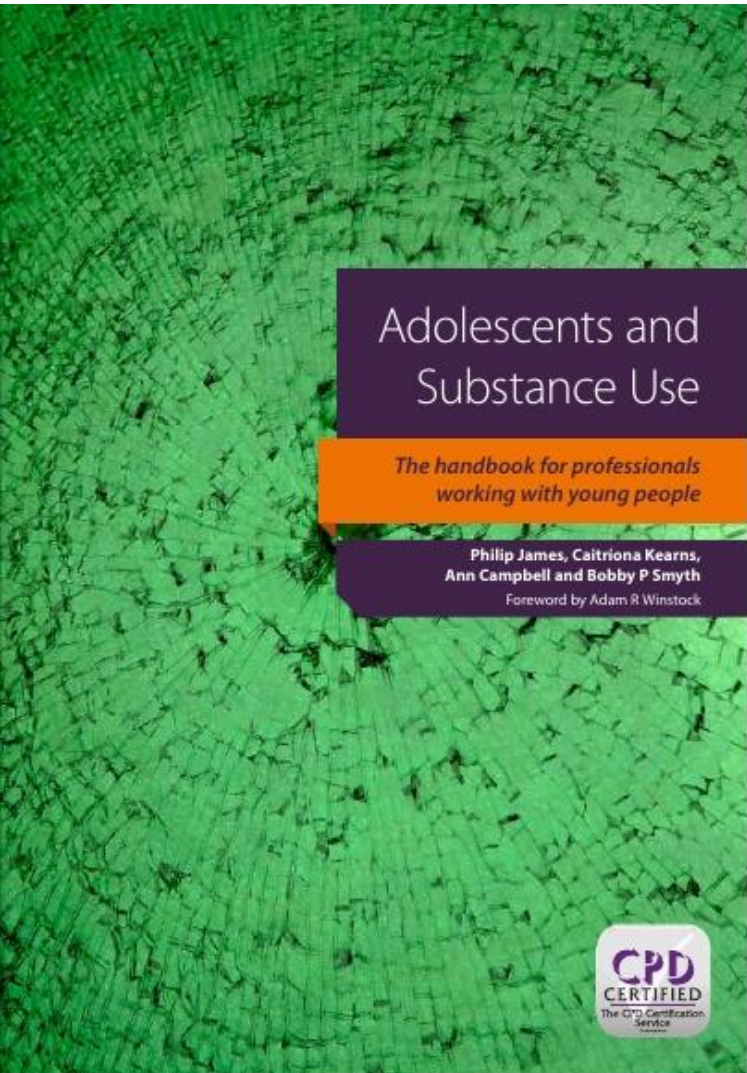
**FAMILY** **PROCESS**

## Parent Training in Nonviolent Resistance for Adult Entitled Dependence

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ELI LEBOWITZ\*  
DAN DOLBERGER†  
EFI NORTOV†  
HAIM OMER‡

# Adolescents and Substance Use: The handbook for professionals working with young people



“This highly practical manual presents an ideal introduction to adolescent substance use. It offers invaluable guidance for all professionals involved with adolescents including social workers, health and social care professionals, family support workers, teachers, counsellors, mental health teams, A&E staff, police and probation officers. The approach these practitioners take in dealing with the problem has considerable influence over outcomes”

<http://www.radcliffehealth.com/shop/adolescents-and-substance-use-handbook-professionals-working-young-people>

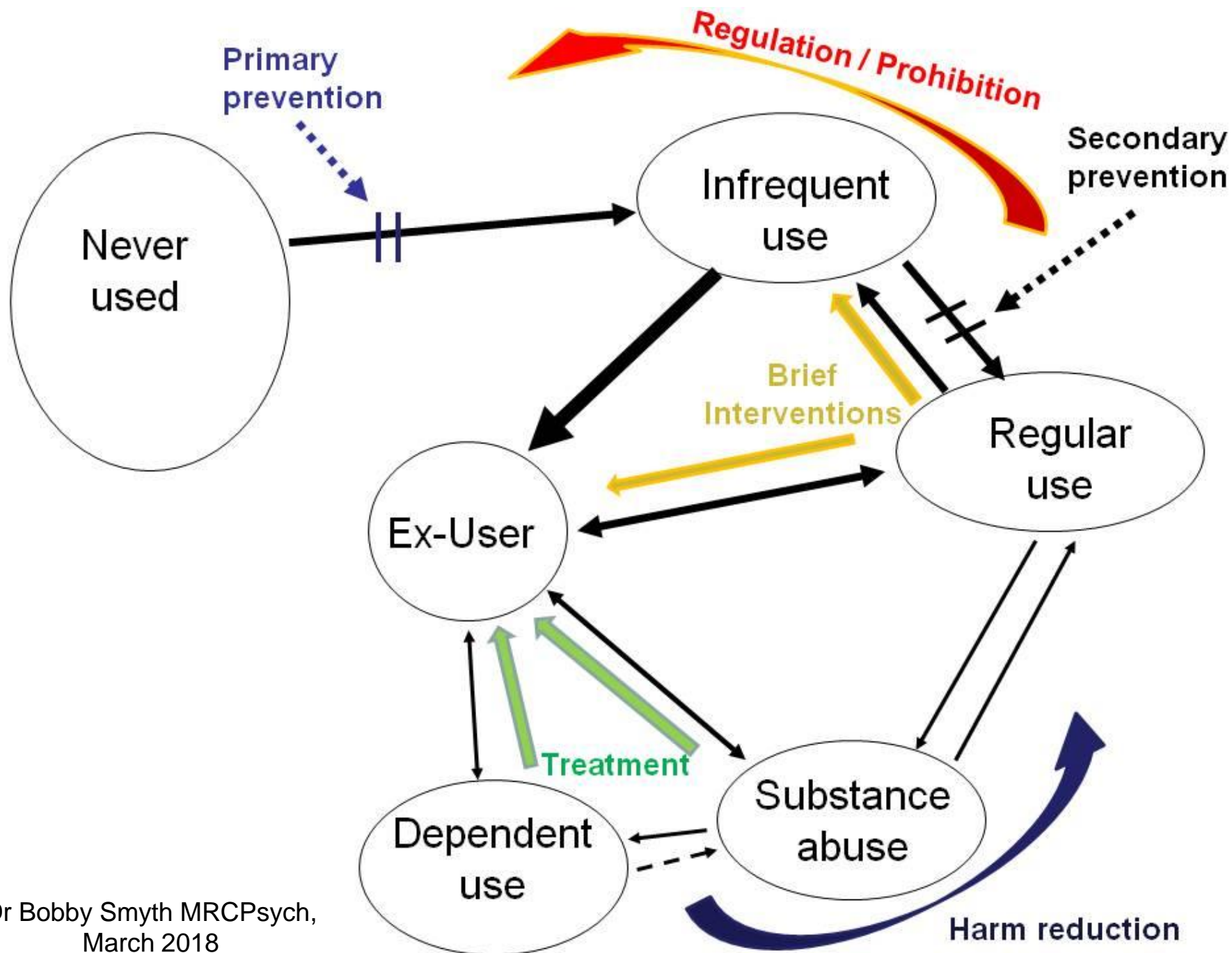
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# A Vision for Change

- “The major responsibility for care of people with addiction lies outside the mental health system”, p146
- This bizarre statement goes against practice & policy throughout the world







- Accept referrals from LHO areas Dublin South Central and Dublin South West (Pop<sup>n</sup> 350k)
- Staffing
  - Clinical Nurse Specialist
  - Counsellor
  - Family Therapist
  - Registrar
  - Consultant
  - Administrator



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# RECOVERY

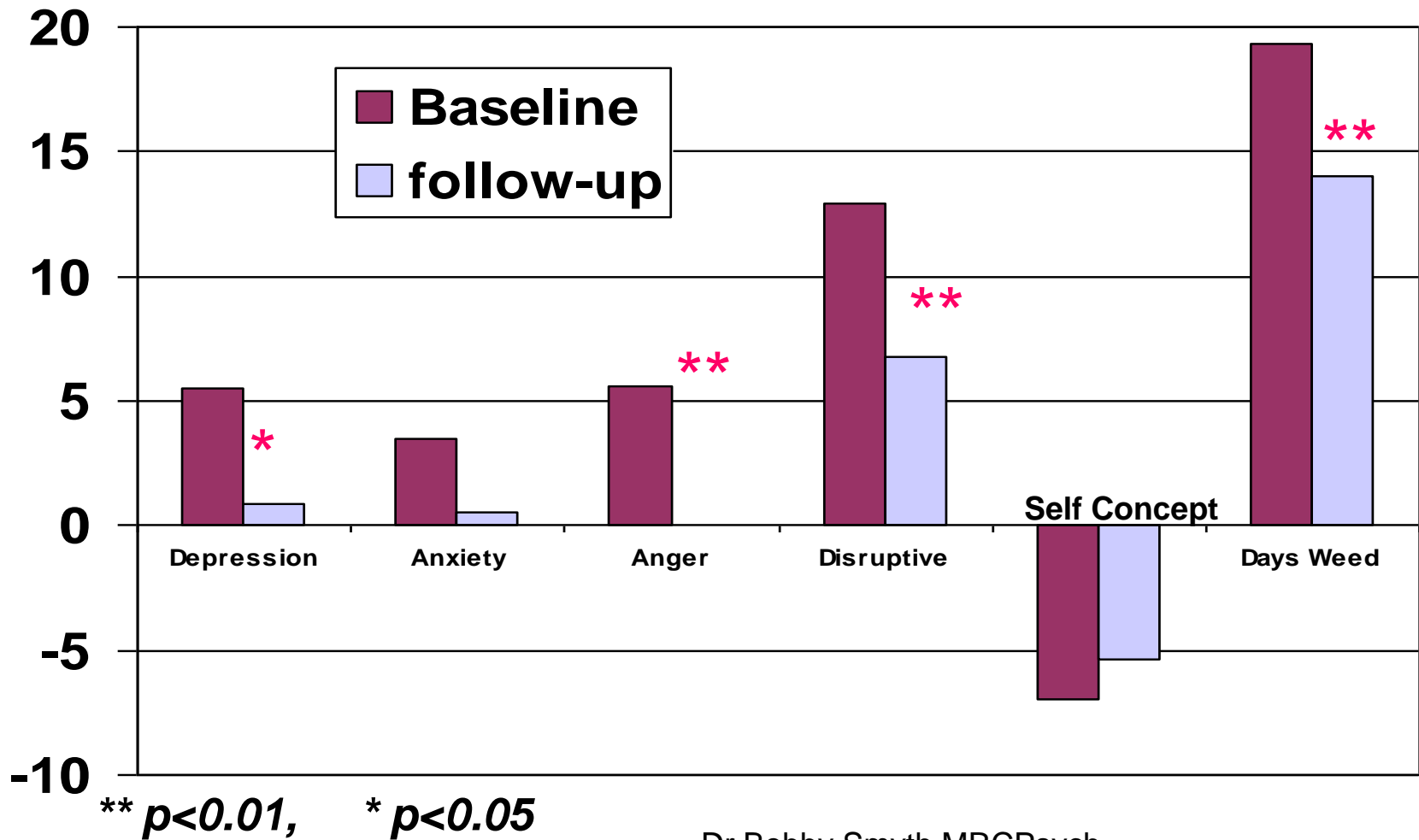
*Expectations*

*Reality*

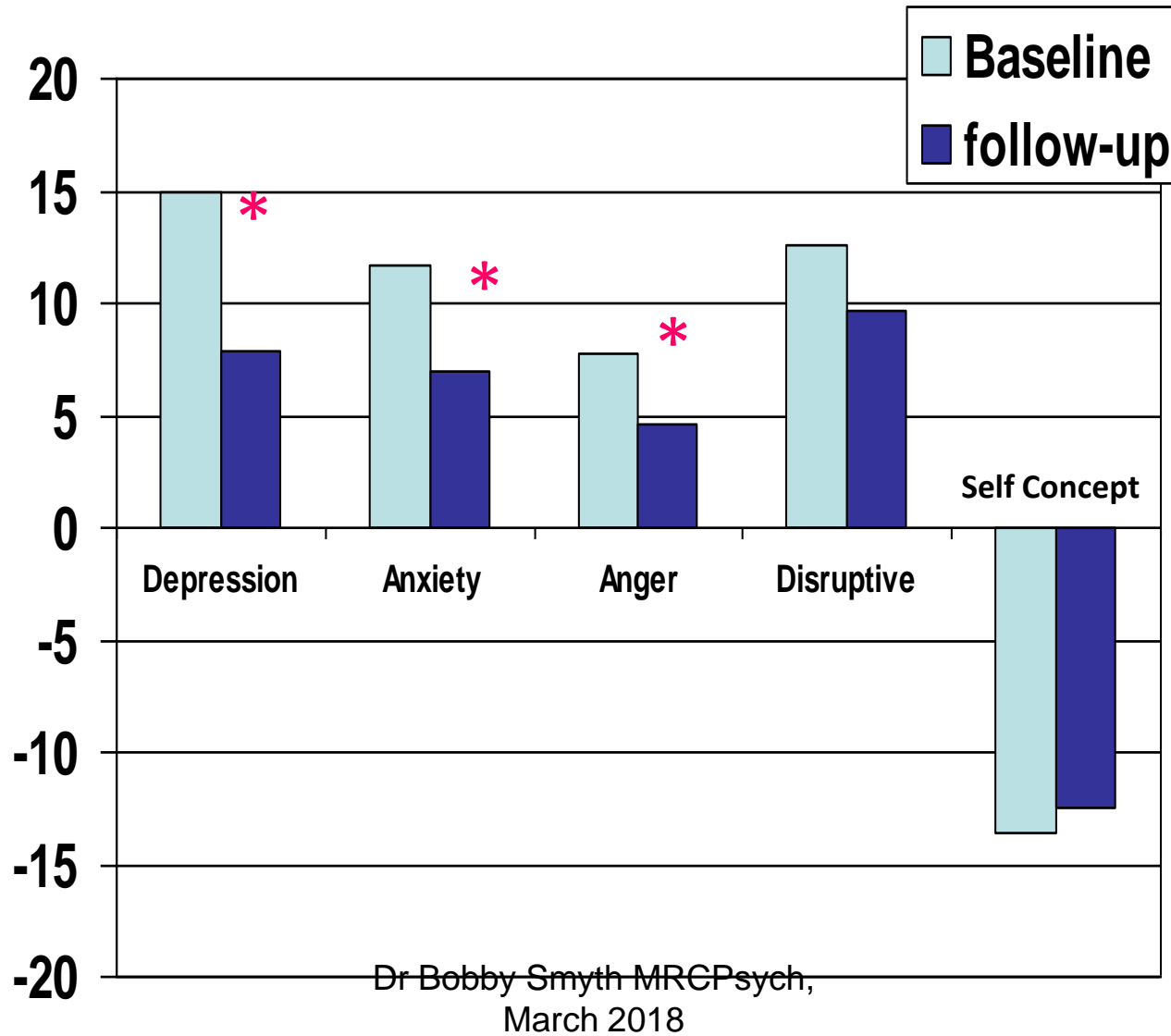


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# Improvement in Psychological wellbeing among cannabis users who engaged in Rx



# Change in Mean BYI Subscale scores In YPP



\*  $p < 0.01$



# Promoting resilience Assets Approach

[www.search-institute.org/assets](http://www.search-institute.org/assets)

**ParentFurther.**  
a Search Institute resource for families

Strengthen  
Relationships ▼

Prepare for  
the Future ▼

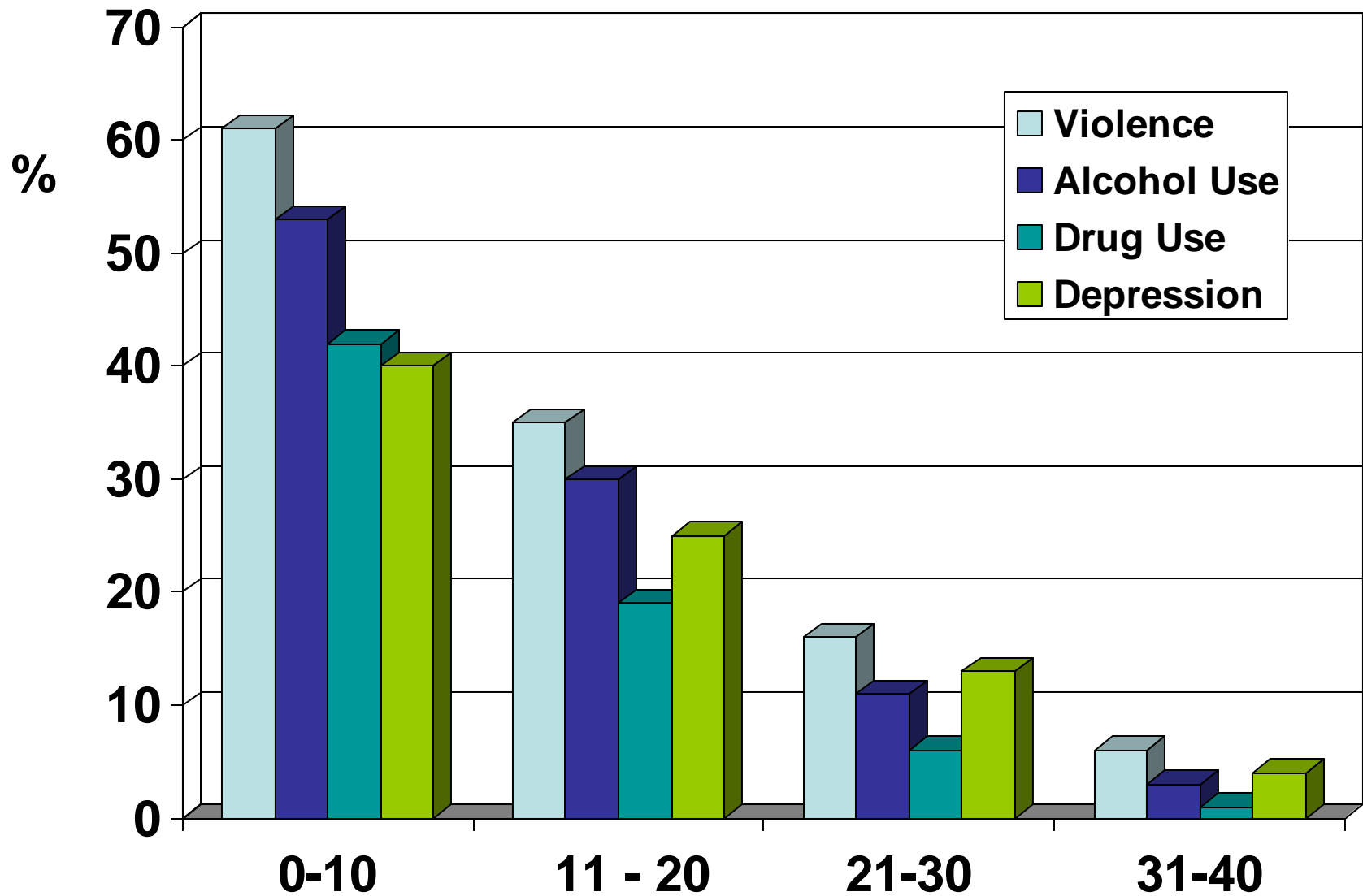
Understand  
Ages & Stages ▼

Keep  
Connected

Photo/Getty Images

**Great Relationships Don't Just Happen.**





**Leffert et al, 1998**

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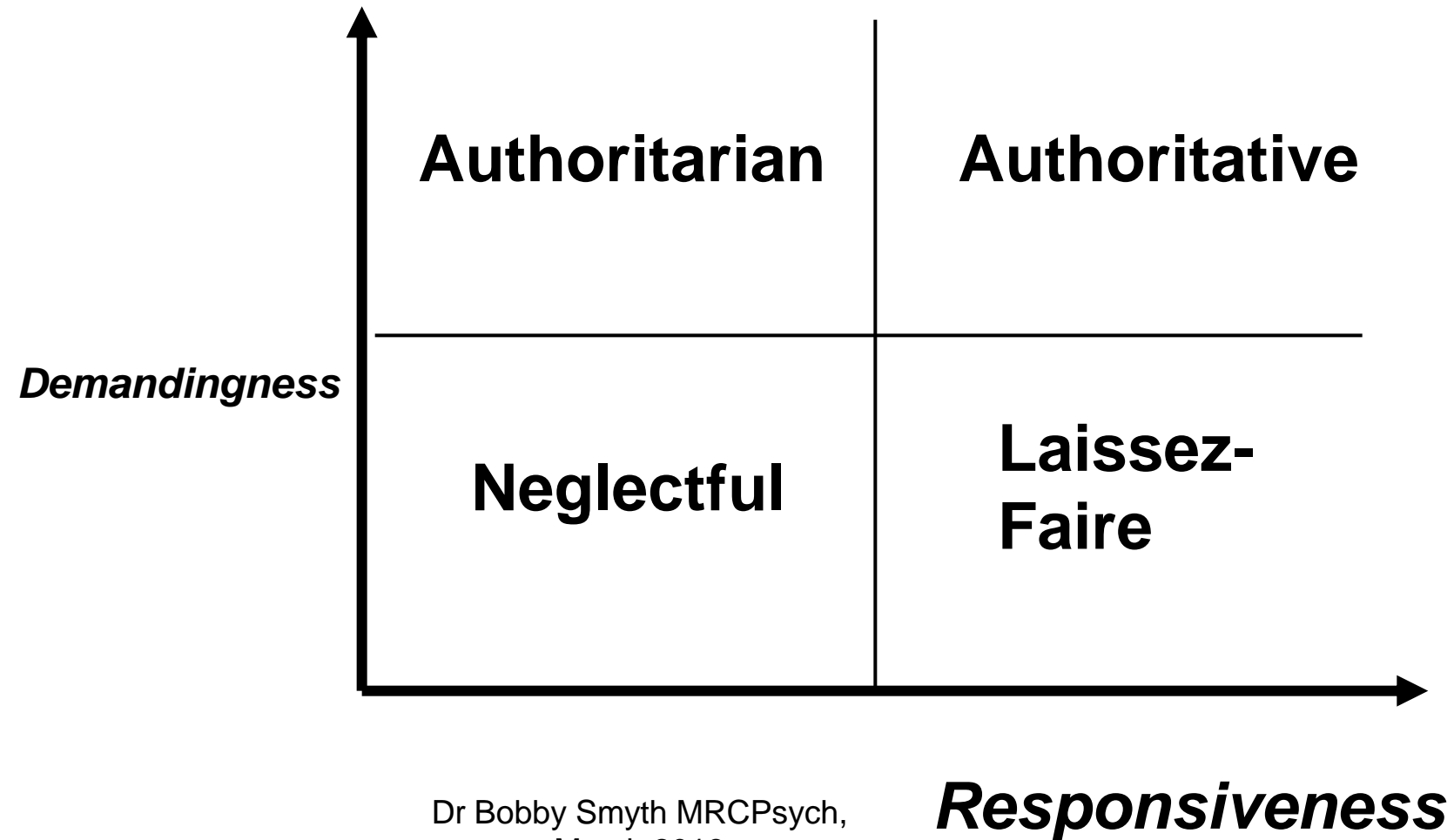
# Internal Assets

- 21. **Achievement motivation** - Young person is motivated to do well (at school).
- 24. Bonding to school - Young person **cares about her or his school.**
- 30. Responsibility - Young person accepts and **takes personal responsibility.**
- 33. Interpersonal competence - Young person has **empathy**, sensitivity, and **friendship skills.**
- 40. Positive view of future - Young person is **optimistic about his or her personal future.**

# External Assets

1. Family support - Family life provides **high levels of love and support.**
2. Positive family communication - teen **willing to seek parent's advice.**
7. **Community values youth** - Young person perceives that adults in community value youth.
11. Family boundaries- **Family has clear rules & consequences, & monitors** youth's whereabouts.
15. Positive peer influence - Young person's **best friends model responsible behavior.**
16. **High expectations** – Both parent(s) and teachers encourage youth to do well.

# Parenting Styles

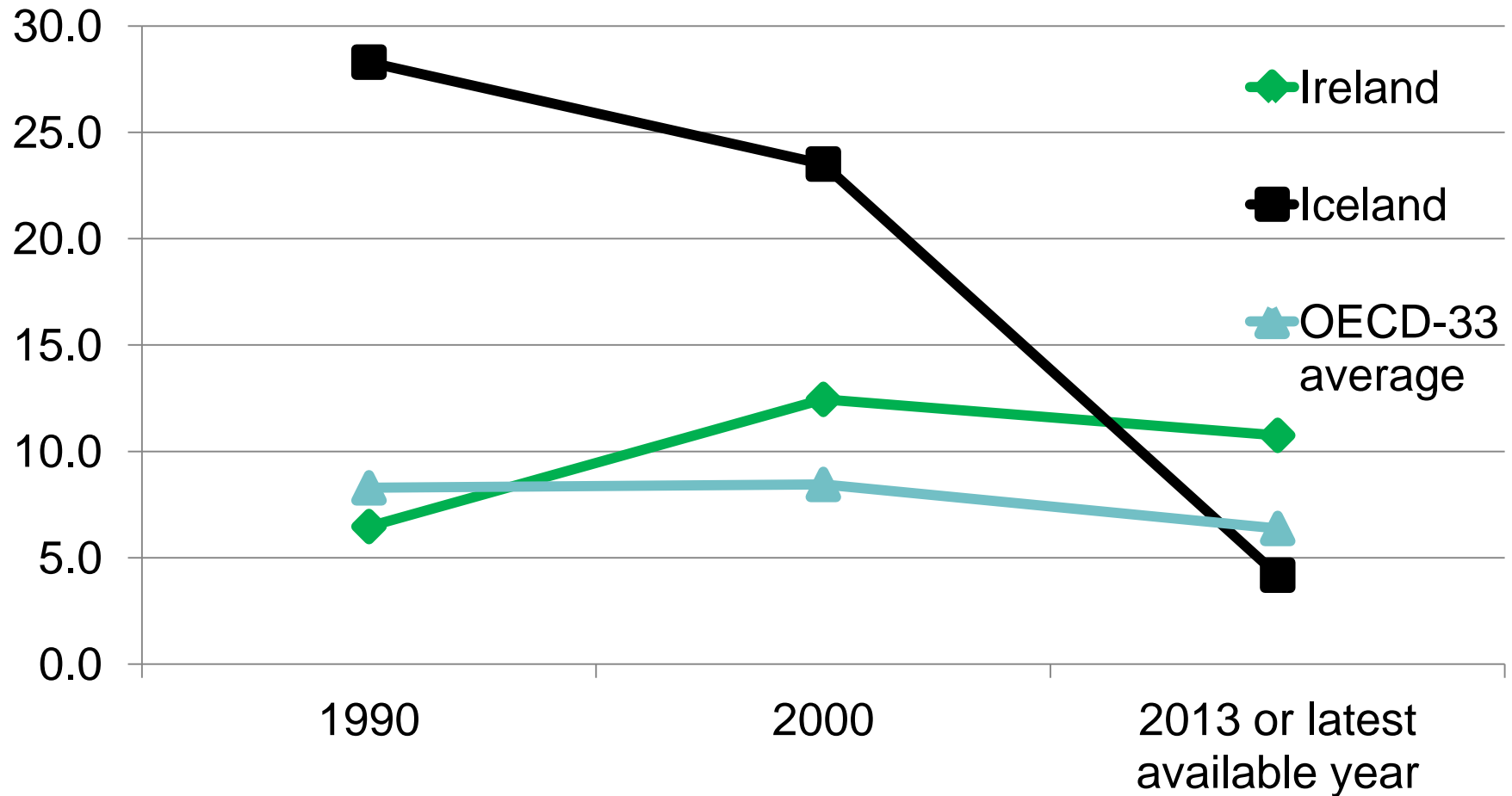






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# Suicide rate among 15-19yo



[http://www.oecd.org/els/family/CO\\_4\\_4\\_Teenage-Suicide.pdf](http://www.oecd.org/els/family/CO_4_4_Teenage-Suicide.pdf)

# Learning from success of others - Iceland.....

From 1998 to 2014 – teens-

Past month drunk- 42% to 5%.

Daily smoking - 23% to 3%

Cannabis lifetime use 17% to 7%

Sports participation - 23% to 42%

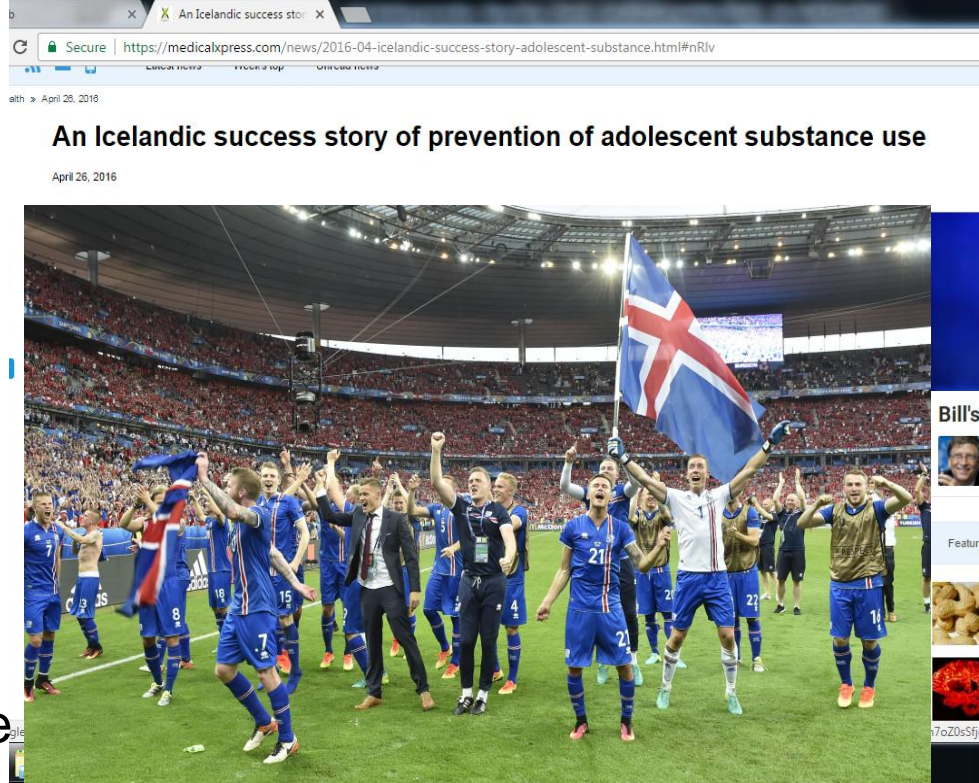
14-16yo who Spent considerable time with their parents - 23% to 50%

% of 14-16 years old outside after 10 pm - 53% to 23%.

How was this achieved?

1. Curfew on 13-16yo can't be outside unaccompanied after 10pm (12pm in summer)
2. Prohibited sales of tobacco to minors and alcohol to anyone under 20.
3. Alcohol is only sold in state-run stores and taxed at more than 80 percent.
4. €300 per child 6-18yo to pay for extra-curricular activities, including sports.
5. Ban alcohol advertising and sports sponsorship
6. Build expectation that parents spend more time with their teenagers

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# Conclusions

- View adolescents as apprentice adults
- Externalising MH probs increase risk SUD
- Many MH harms linked to substance use.
- MH symptoms tend to reduce during SUD treatment
- Increasing developmental assets improves outcomes
- Iceland should be our model for the future