

Lives through time: a celebration of 60 years of NCDS

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Longitudinal population studies become more valuable with time, and often develop in unexpected ways, yielding outcomes that could not have been predicted at the outset

However, they are expensive and require long-term commitment...

Cohort studies' contributions to science, policy and public understanding

Responses to ESRC Longitudinal Studies Review 2017

- Intergenerational continuities and discontinuities – differences and inequalities in terms of wealth, social values and attitudes
- *Intergenerational health inequalities – particularly in terms of mental health and obesity*
- Social mobility, education and intergenerational transfers
- *Ageing, health and well-being – NCDS will become an ageing study of major strategic importance*
- Extending working lives – NCDS uniquely positioned to consider the factors that encourage or inhibit extended labour market participation
- *Processes underlying differentiated outcomes - in family building, education, social and geographical mobility, political engagement, health and mortality*

NCDS benefits from...

- succession of imaginative, determined PIs, study teams and funders
- large, representative sample
 - *generalizability*
 - *small groups of interest*
- coverage of extended period of the life course, prenatal→
 - *earlier influences on later development*
- multipurpose focus and data
 - *social and biological influences – and their interplay*
 - *flexibility to respond to new developments in science, methodology, policy, and public awareness*
- extensive, imaginative multidisciplinary user group
- loyal cohort members
- part of succession of British cohorts
 - *replication; impact of social and policy change*

Strengths of the birth cohort design

(Wadsworth & Bynner, 2011)

- trajectories of individual development (eg height, cognitive skills, employment histories, family formation) across the life course
 - *equifinality & multifinality*
- timing and accumulation of risk for poor outcomes; periods of particular vulnerability; persistence of effects of early risk over time
- resilience – factors that foster escape from disadvantage, and ‘beating the odds’

Celebrating NCDS' contributions

1. Trajectories of mental health problems across the life course

Developmental trends in child mental health

- first epidemiological study (US) published 1958
- first UK reports (Isle of Wight and NCDS) late 60s/early 70s
- NCDS age 7:
 - *higher incidence of behaviour problems in boys than girls*
 - *boys more likely to show aggression and restlessness*
 - *girls more likely to show anxieties and feeding difficulties*
 - *social class variations in levels of 'maladjustment'*
 - *possible association with length of gestation*
- by age 16:
 - *some problems transient, others more persistent*
- **Questions**
 - continuities to adulthood?
 - implications for other aspects of functioning and development?

Childhood-adult continuities in mental health problems

looking backwards and looking forwards

Childhood antecedents of schizophrenia and affective illness: social adjustment at ages 7 and 11

D John Done, Timothy J Crow, Eve C Johnstone, Amanda Sacker

doi.org/10.1136/bmj.309.6956.699

MAIN FINDINGS

Even at the age of 7 subjects who will later develop schizophrenic illness differ from schoolmates in the eyes of their teachers.

BMJ 1994

Childhood and Adulthood Psychological Ill Health as Predictors of Midlife Affective and Anxiety Disorders

The 1958 British Birth Cohort

Charlotte Clark, PhD; Bryan Rodgers, PhD; Tanya Caldwell, PhD; Chris Power, PhD; Stephen Stansfeld, PhD

Arch Gen Psychiatry. 2007;64(6):668-678. doi:10.1001/archpsyc.64.6.668

Conclusions: Childhood psychological health is an important independent distal factor in adulthood psychological health.

Archives of General Psychiatry 2007

The impact of schizophrenia and mood disorder risk alleles on emotional problems: investigating change from childhood to middle age

Lucy Riglin¹, Stephan Collishaw¹, Alexander Richards¹, Ajay K. Thapar¹, Frances Rice¹, Barbara Maughan², Michael C. O'Donovan¹ and Anita Thapar¹

<https://doi.org/10.1017/S0033291717003634>

Conclusions. Our prospective investigation suggests that early (childhood) emotional problems in the general population share genetic risk with schizophrenia, while later (adult) emotional problems also share genetic risk with MDD. The results suggest that the genetic architecture of depression/anxiety is not static across development.

Psychological Medicine 2018

**‘Whatever else we can say about mental disorders
... they are distinct from chronic physical disorders
because they have their strongest foothold in
youth...’**

Kessler et al, 2005

Child mental health: implications for other aspects of adult development

Life-course fertility patterns associated with childhood externalizing and internalizing behaviors

Markus Jokela

DOI 10.1007/s00787-014-0519-x

Fertility, family formation, and reproductive health should be considered as relevant outcomes when evaluating the overall long-term psychological and social trajectories associated with childhood behavioral problems.

Health and social precursors of unemployment in young men in Great Britain

Scott M Montgomery, Mel J Bartley, Derek G Cook, Michael EJ Wadsworth

J Epidemiol Community Health 1996;50:415-422

Impact of childhood and adulthood psychological health on labour force participation and exit in later life

C. Clark^{1*}, M. Smuk¹, D. Lain², S. A. Stansfeld¹, E. Carr³, J. Head³ and S. Vickerstaff⁴

doi:10.1017/S0033291717000010



Psychological Distress Across the Life Course and Cardiometabolic Risk

Findings From the 1958 British Birth Cohort Study

Ashley Winning, ScD, MPH,* M. Maria Glymour, ScD, MS,† Marie C. McCormick, MD, ScD,* Paola Gilsanz, ScD, MPH,*
Laura D. Kubzansky, PhD, MPH*

<http://dx.doi.org/10.1016/j.jacc.2015.08.021>

Childhood Problem Behaviors and Death by Midlife: The British National Child Development Study

MARKUS JOKELA, PH.D., JANE FERRIE, PH.D., AND MIKA KIVIMÄKI, PH.D.

DOI: 10.1097/CHI.0b013e31818b1c76

The long shadow cast by childhood physical and mental problems on adult life

Alissa Goodman^a, Robert Joyce^a, and James P. Smith^{b,1}

In this article we assess and compare long-term adult socioeconomic status impacts from having experienced psychological and physical health problems in childhood. To do so, we use unique prospective data from the British National Child Development Study, a continuing panel study of a cohort of 17,634 children born in Great Britain during a single week in March 1958. To date there have been nine waves for this birth cohort to monitor their physical, educational, and social development, during childhood (at birth and 7, 11, and 16 y) and adulthood (age 23, 33, 42, 46, and 50 y). Excellent contemporaneous information exists throughout childhood on physical and psychological health, captured by doctor and nurse-led medical examinations and detailed parental and teacher questionnaires. This information is combined with a wealth of contemporaneous information on adult health and economic experiences collected from cohort members. Information includes their economic circumstances (earnings, labor supply, and other sources of family income), physical and psychological health, and relationship status. Large effects are found due to childhood psychological problems on the ability of affected children to work and earn as adults and on intergenerational and within-generation social mobility. Adult family incomes are reduced by 28% by age 50 y, with sustained impacts on labor supply, marriage stability, and the conscientiousness and agreeableness components of the “Big Five” personality traits. Effects of psychological health disorders during childhood are far more important over a lifetime than physical health problems.

‘The economic costs related to childhood mental disorders are far more important than physical illnesses during the childhood years, largely because the impacts of mental health problems occur early in adulthood whereas the physical health problems have a delayed impact’

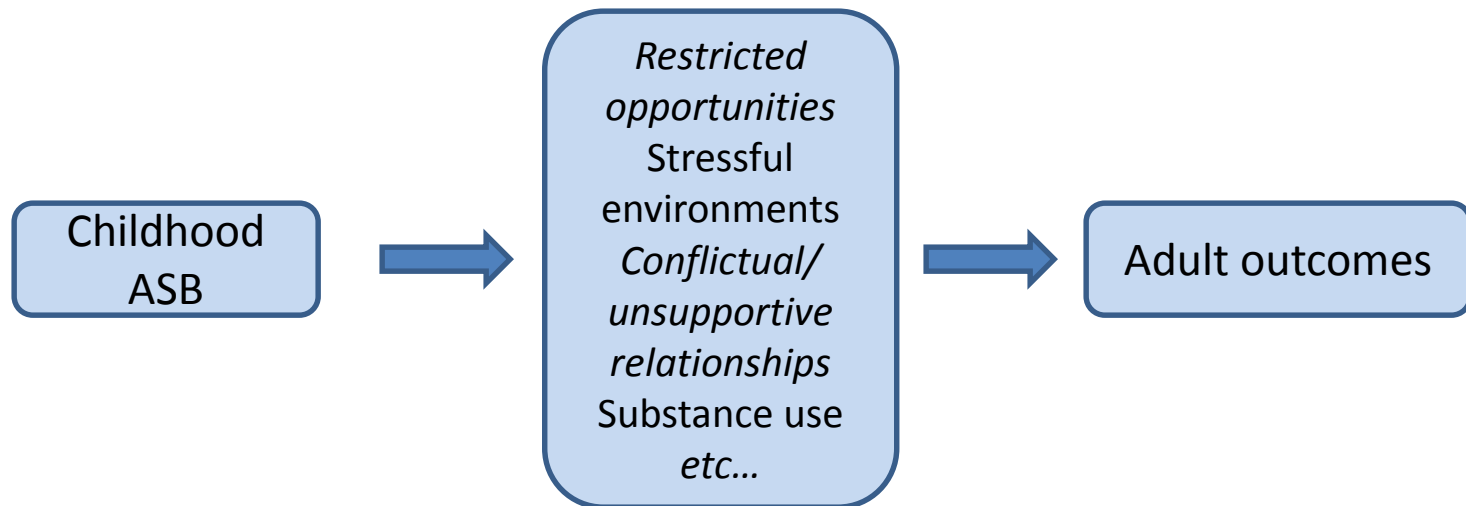
**What accounts for these long-term continuities
- and how could we best intervene to disrupt them...?**

Pathways from childhood conduct problems (ASB) to poor adult outcomes

Lahey, 2015

1. Downstream effects of childhood behaviour

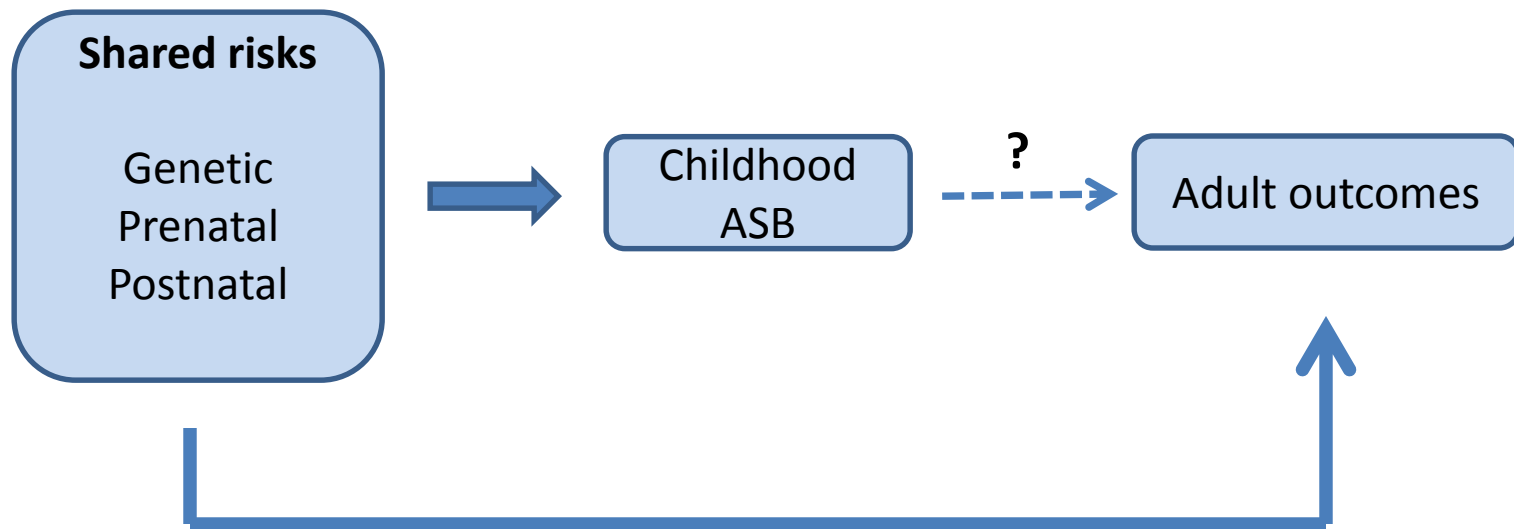
Developmental cascades/'snares'



Pathways from childhood ASB to poor adult outcomes

Lahey, 2015

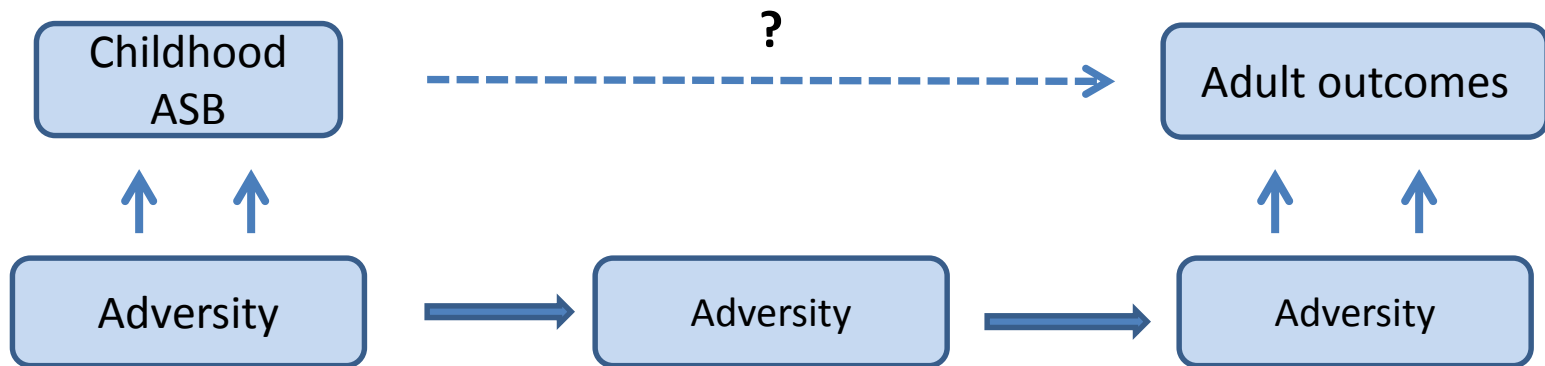
2. Shared risk factors



Pathways from childhood ASB to poor adult outcomes

Lahey, 2015

3. Chronic adverse exposures across the life course



Contextual-historical influences?

Time trends in child and adolescent mental health

- numerous pointers to increasing rates of mental health problems post WWII

but

- numerous methodological challenges
- repeated population-based studies with similar measurements valuable sources of evidence

Collishaw et al, 2004 (16 year-olds in NCDS, BCS70, 1999 ONS study)

- marked increase in levels of adolescent conduct problems 1974→1986→1999; more recent increase in emotional problems
- not evident at younger ages (and more recent data suggest some levelling off/declines in some adolescent problems)

What might explain?

- more challenging...
 - *less known re trends in risk factors (and measures less well harmonized)*
 - *different factors may be implicated in individual differences within populations and level differences between populations*

Celebrating NCDS' contributions

2. Long-term impact of childhood adversity

Childhood adversity

- patterns and impact of social inequalities: *core and continuing theme in NCDS since its inception*
- integral to development of life course approaches to chronic disease epidemiology

From Developmental Origins
of Adult Disease to Life
Course Research on Adult
Disease and Aging: Insights
from Birth Cohort Studies

Chris Power,¹ Diana Kuh,² and Susan Morton³

Annual Review of Public Health, 2013, 34:7–28

One major insight from birth cohorts is that for several adult chronic diseases and functional outcomes ... adult factors alone provide only a partial explanation. This observation is supported by research showing that factors from early-life stages ... are associated with later health and disease, even after controlling for adult factors

Childhood adversity

- more recent concern with early *psychosocial* adversities:
 - *maltreatment*
 - *neglect*
 - *dysfunctional family relationships*
- US ACEs (adverse child experiences) studies begun late 1990s

ACEs can have lasting effects on....



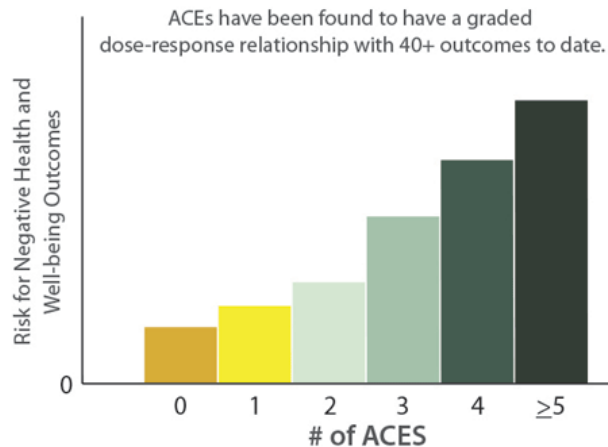
Health (obesity, diabetes, depression, suicide attempts, STDs, heart disease, cancer, stroke, COPD, broken bones)



Behaviors (smoking, alcoholism, drug use)



Life Potential (graduation rates, academic achievement, lost time from work)



*This pattern holds for the 40+ outcomes, but the exact risk values vary depending on the outcome.

Childhood adversity

Adverse childhood experiences and premature all-cause mortality

Michelle Kelly-Irving · Benoit Lepage · Dominique Dedieu ·
Mel Bartley · David Blane · Pascale Grosclaude ·
Thierry Lang · Cyrille Delpierre

DOI 10.1007/s10654-013-9832-9

Child Neglect and Maltreatment and Childhood-to-Adulthood Cognition and Mental Health in a Prospective Birth Cohort

Marie-Claude Geoffroy, PhD, Snehal Pinto Pereira, PhD, Leah Li, PhD, Chris Power, PhD

J Am Acad Child Adolesc Psychiatry 2016;55:33

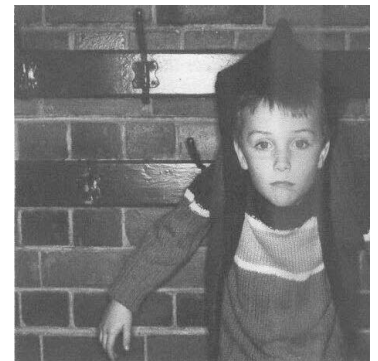
Adverse childhood experiences and physiological wear-and-tear in midlife: Findings from the 1958 British birth cohort

Cristina Barboza Solís^{a,b,c,1,2}, Michelle Kelly-Irving^{a,b,1}, Romain Fantin^{a,b}, Muriel Darnaudéry^d, Jérôme Torrisani^e,
Thierry Lang^{a,b,f}, and Cyrille Delpierre^{a,b}

www.pnas.org/cgi/doi/10.1073/pnas.1417325112

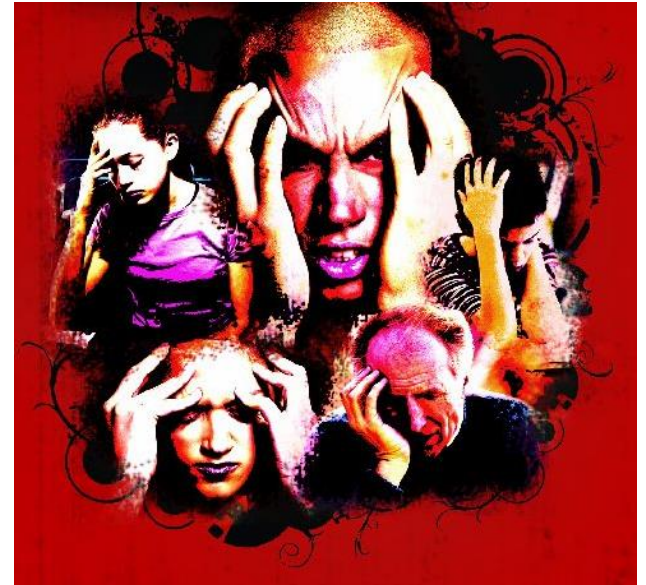
These results based on a path analysis show that childhood adversity is associated with physiological wear-and-tear in midlife as measured by AL. This relationship is mediated, but not fully explained, by later life variables. The path analysis suggests that childhood adversities are associated with an increased AL score in midlife for men via health behaviors, education, and wealth, and for women via wealth, education, smoking, and BMI.

Bullying victimization



We should bother about bullying

- Common among children and adolescents
- Can be persistent across time
- Is widespread across different settings
- Can take various forms
- Knows no boundaries
- Evolves with time



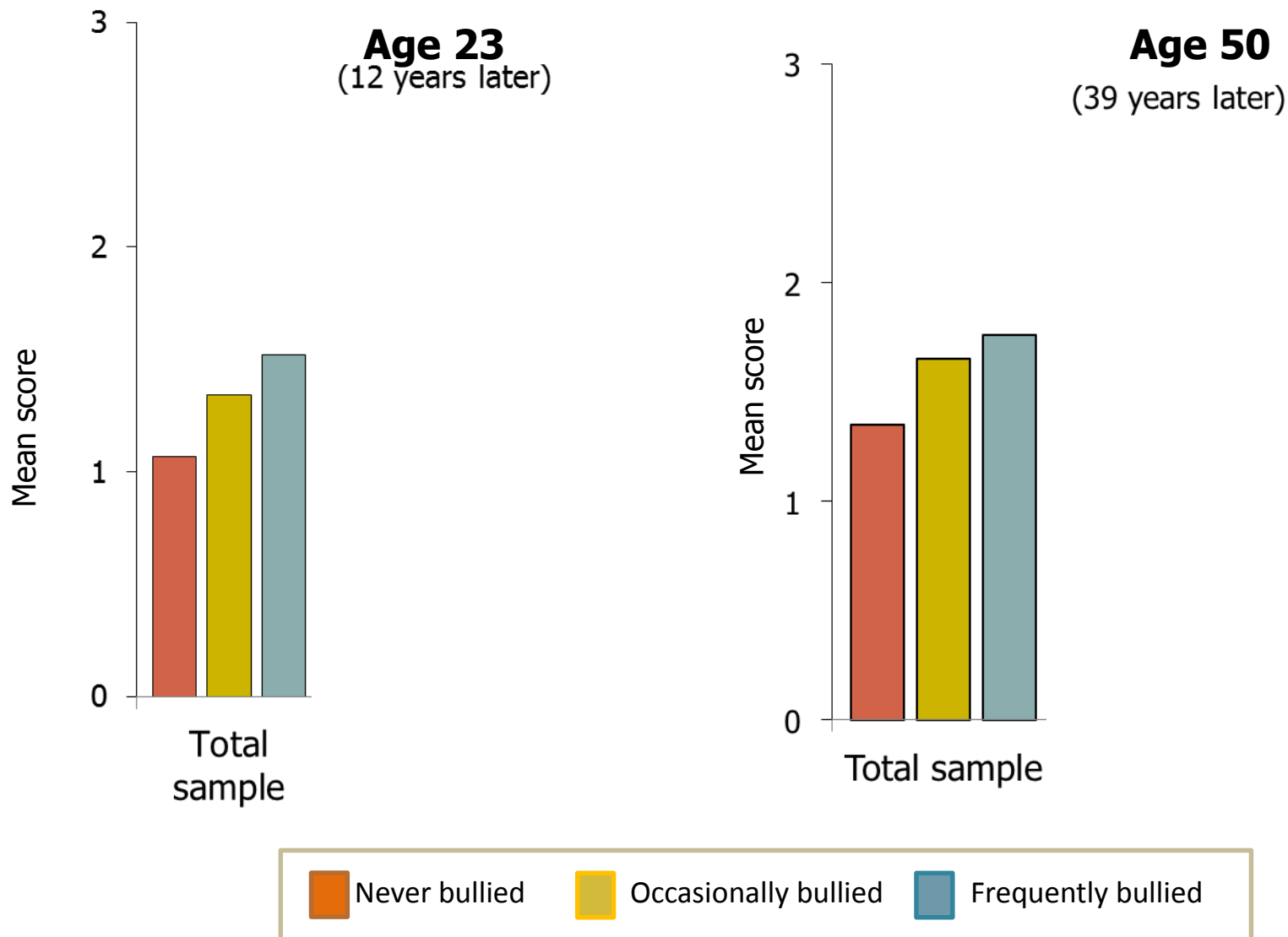
Bullying victimization

- extensive evidence of associations with mental health problems in childhood and adolescence
- some evidence of persisting effects into early adulthood
- are impacts still evident later in the life course?

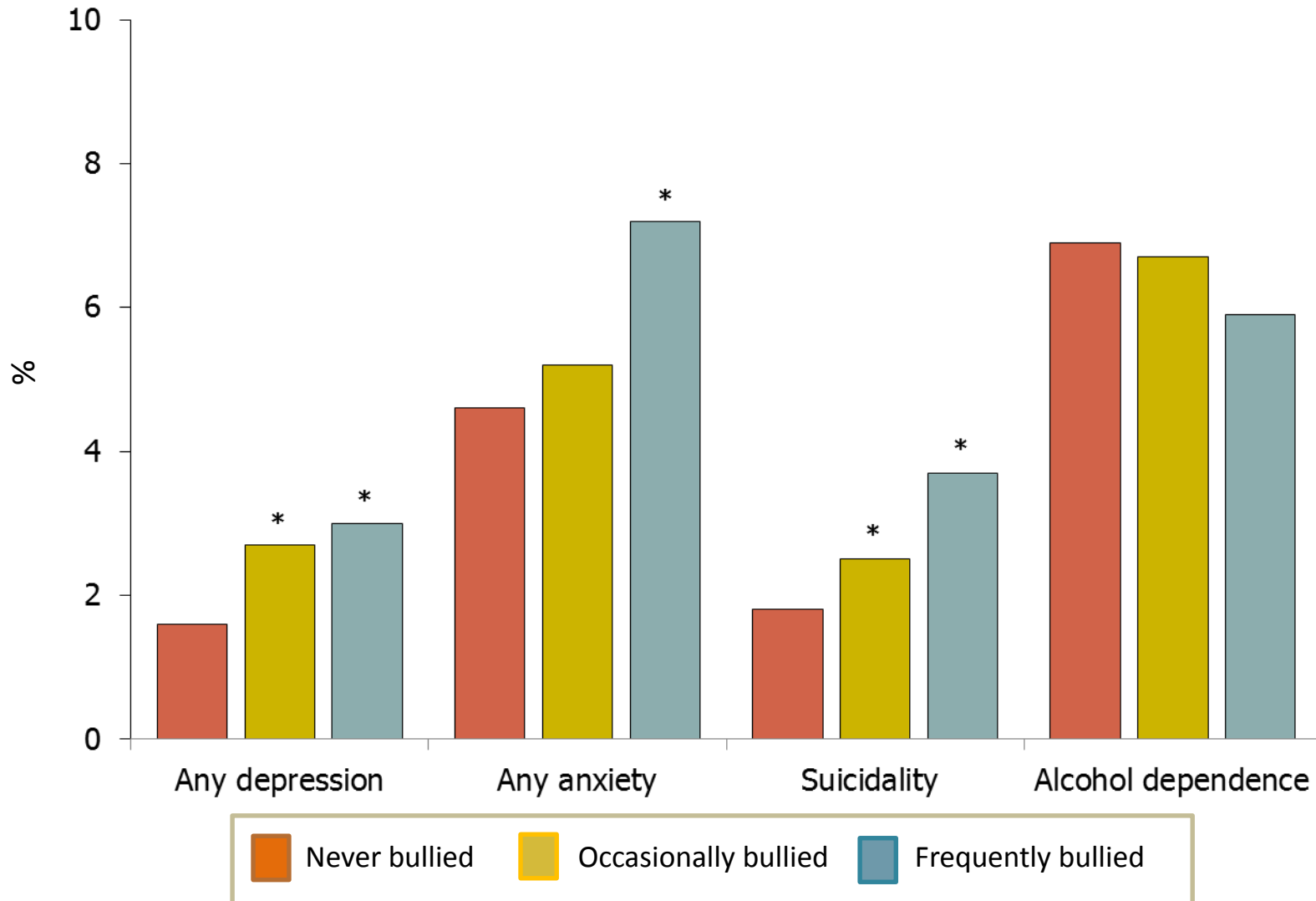
Studies in NCDS

- Louise Arseneault, Ryu Takizawa, Sara Evans-Lacko, Nic Brimblecombe
- exposure to bullying: ages 7 and 11
 - *(rates and correlates similar to contemporary samples)*
- outcomes: across adulthood

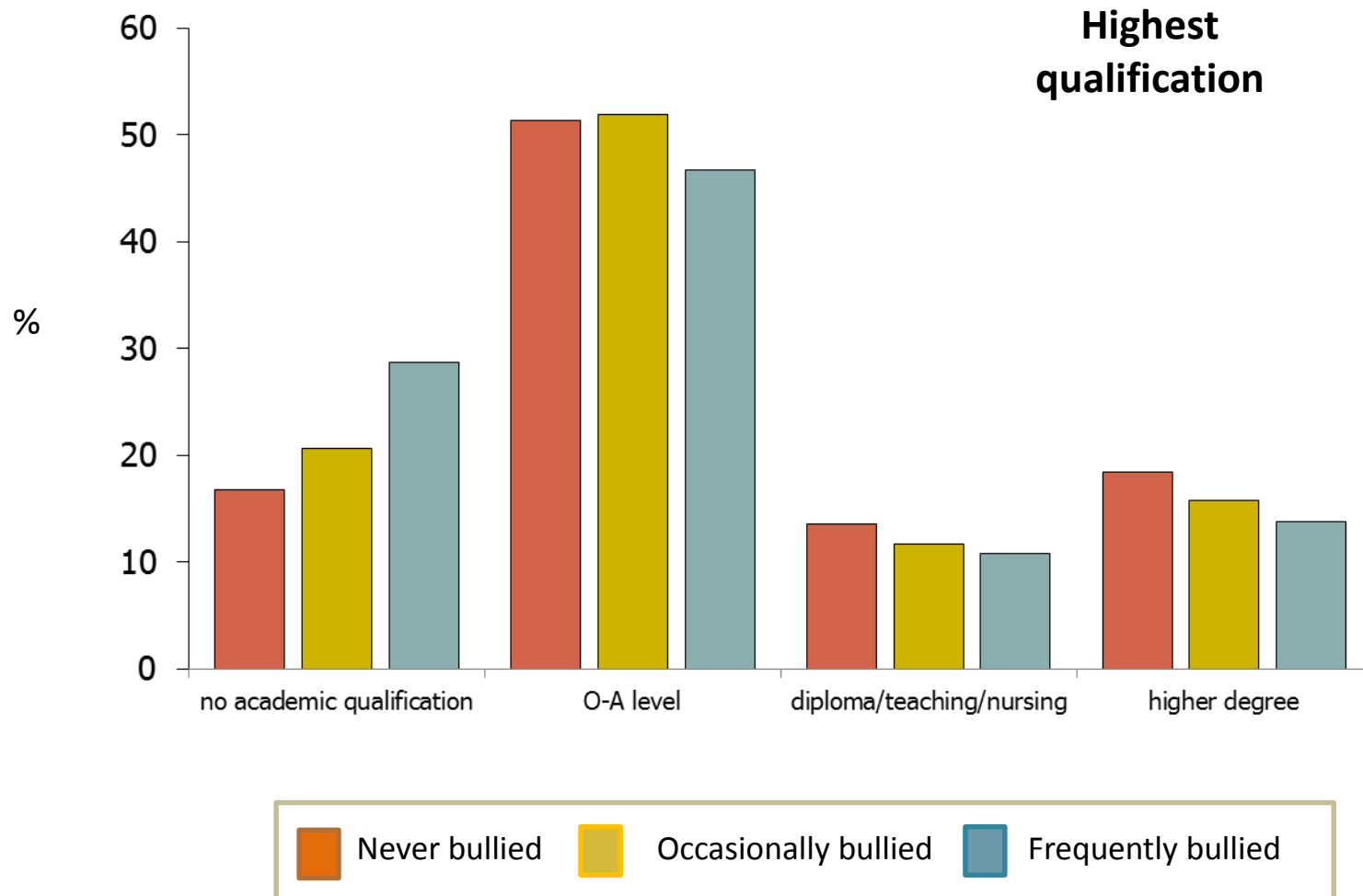
Childhood bullying victimization and adult psychological distress



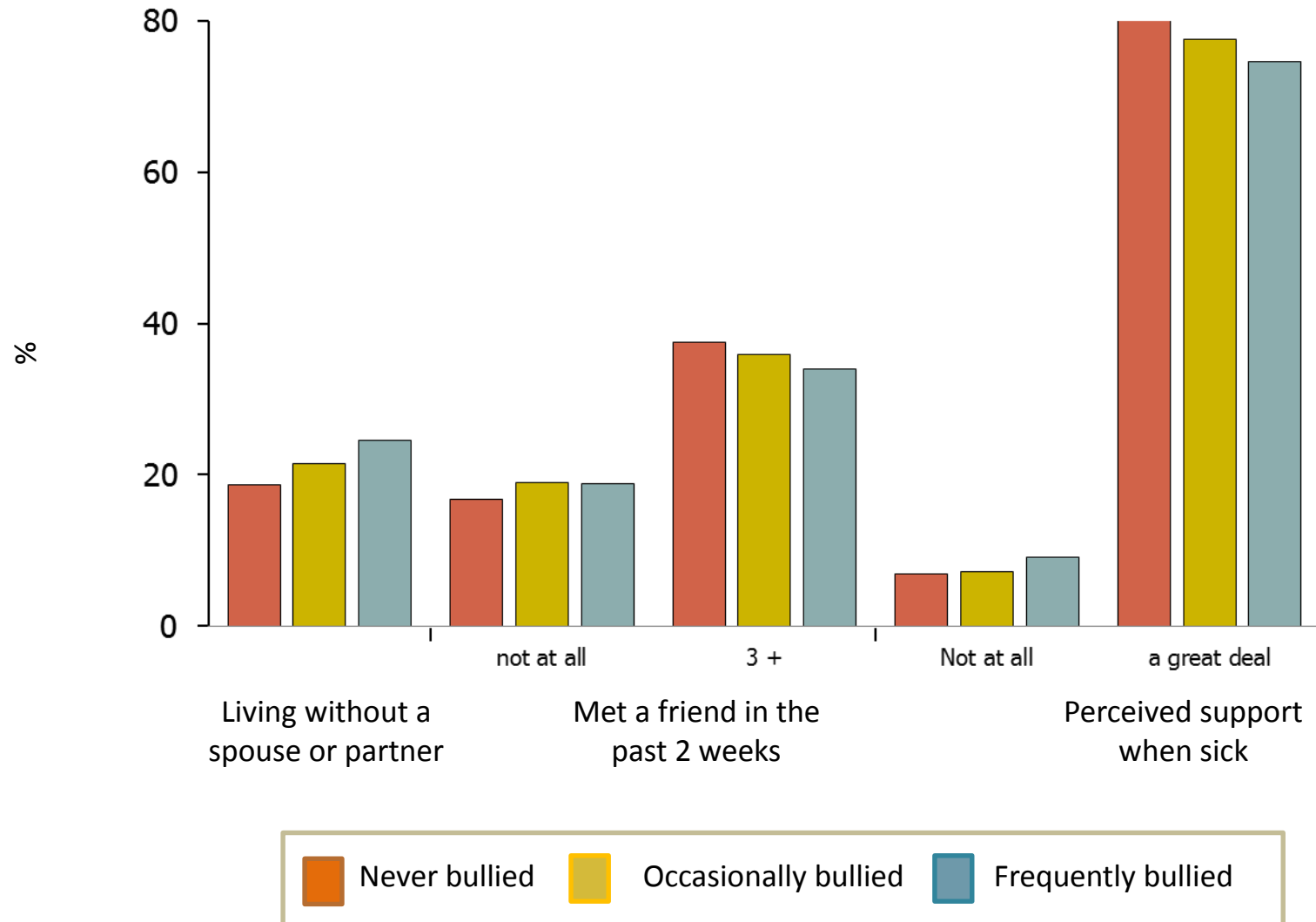
Childhood bullying victimization and psychiatric outcomes age 45



Childhood bullying victimization and adult qualifications



Childhood bullying victimization and adult social relationships



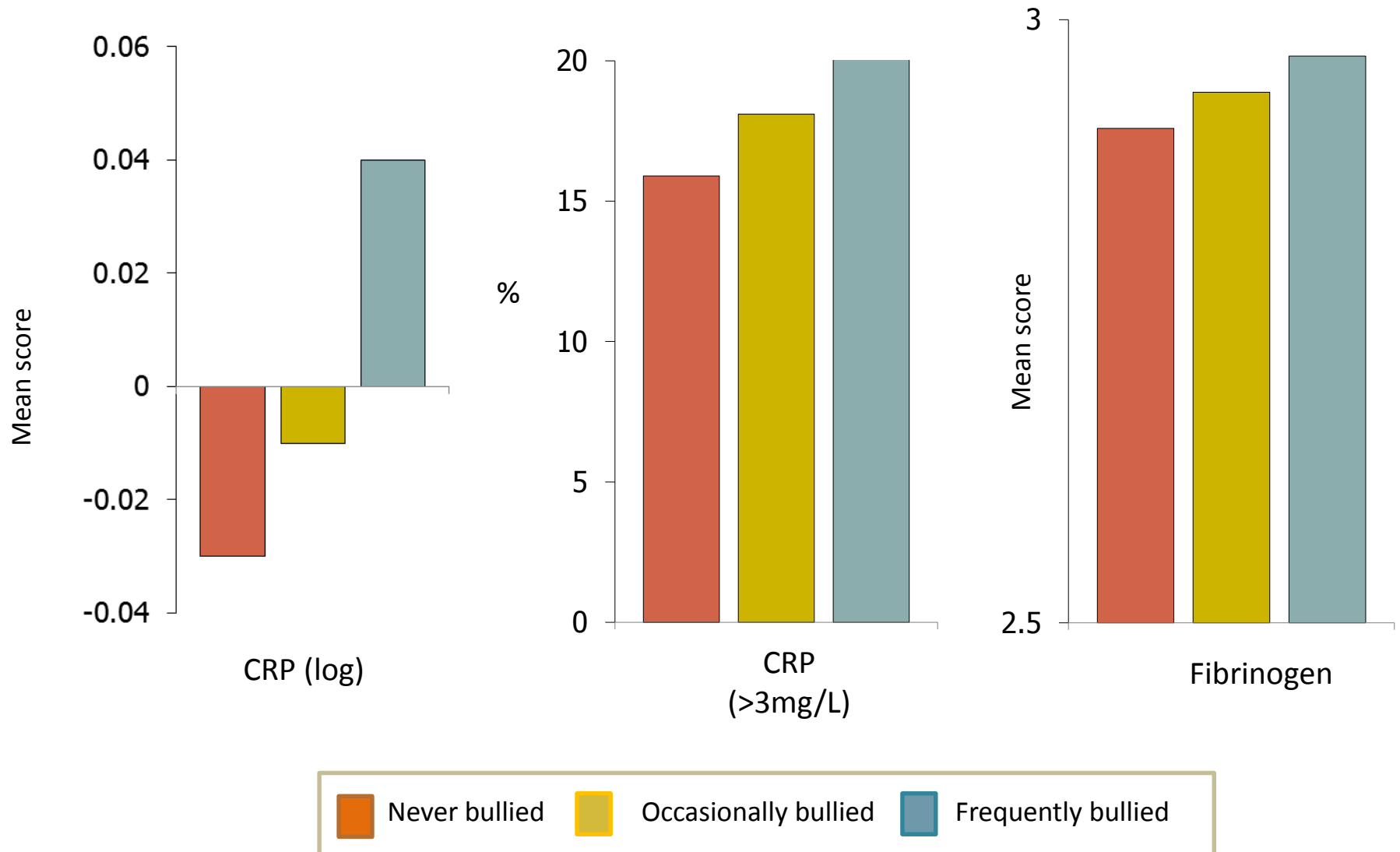
Associations with age-related disease?

evidence from animal and human studies

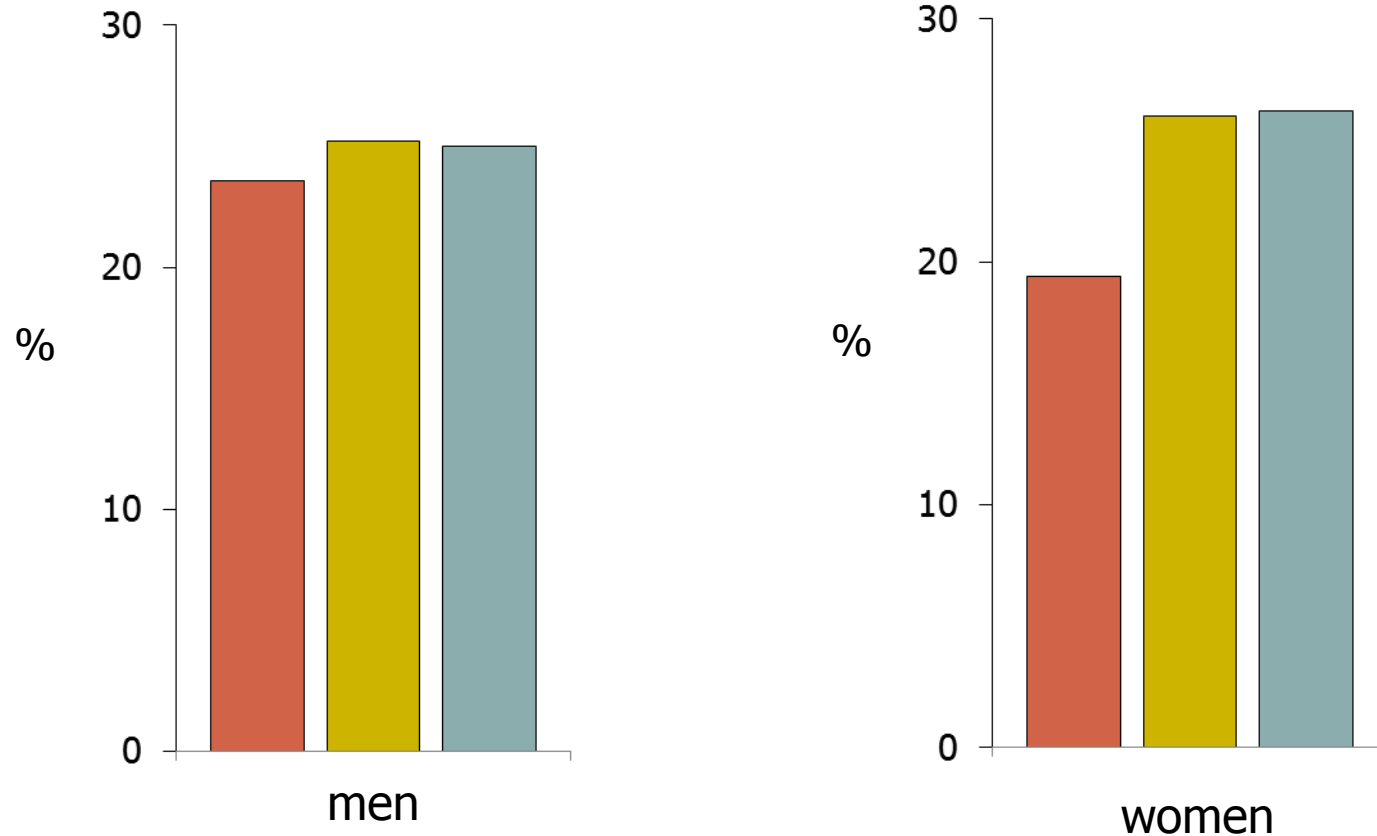
- *early stress affects immune and metabolic systems that promote ill-health*

biological 'embedding' (life gets under your skin...)

Childhood bullying victimization and inflammation at age 45

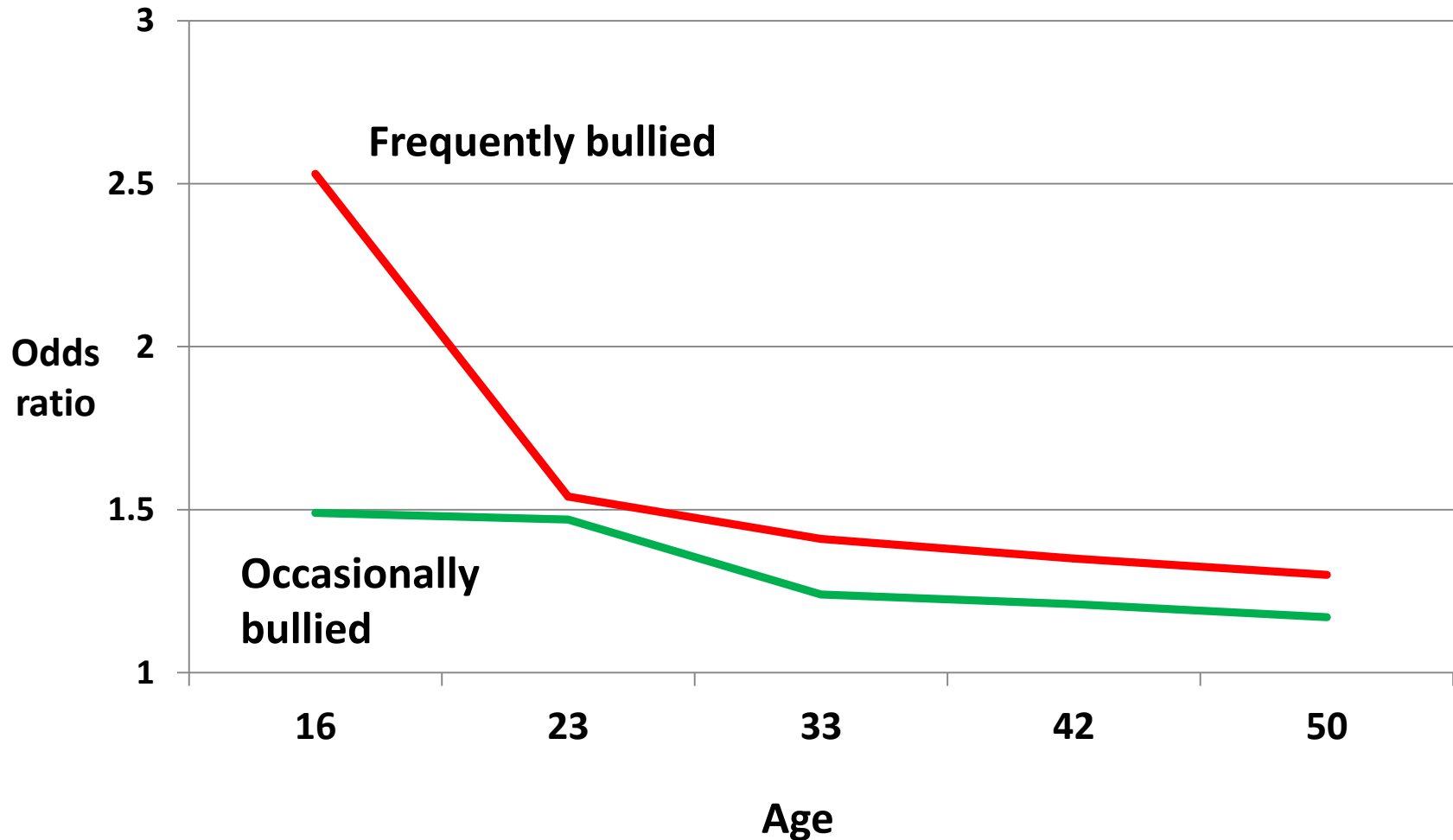


Being bullied in childhood and obesity in adulthood



Never bullied Occasionally bullied Frequently bullied

Childhood bullying victimization and mental health service use



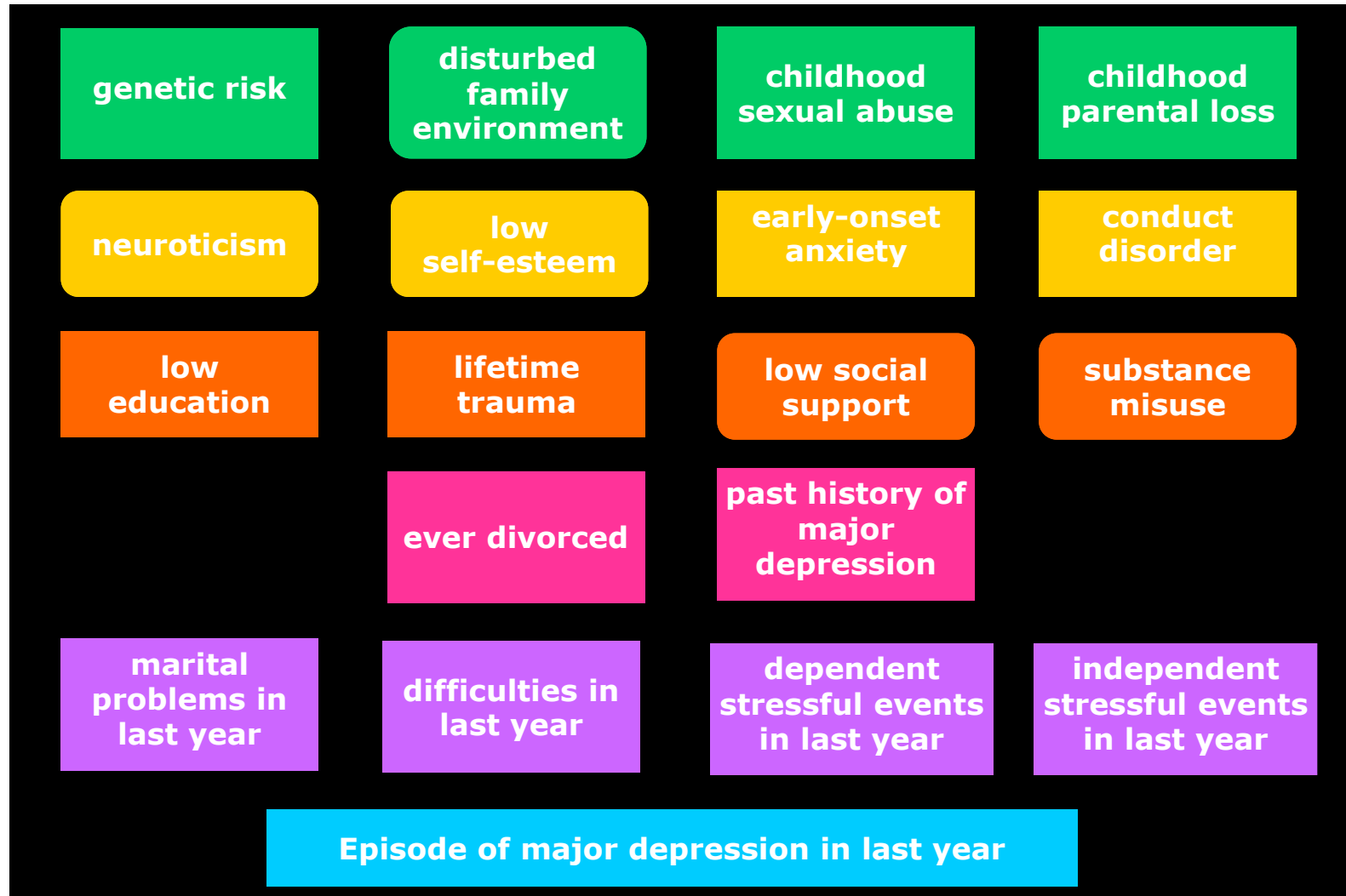
Long-term associations with childhood adversity

- impressive demonstrations of long-term, policy-relevant associations across extended periods of the life course

first steps in research agenda

- underlying processes...?
- causality...?
 - *reverse causality (child characteristics → bullying victimization)*
 - *key aspects of exposure?*
 - *timing: sensitive period; cumulative risk – etc?*
 - *confounding*
 - many outcomes (social, psychological and biological) multifactorially determined
 - many predictors (social, psychological and biological) co-occur
- challenges of dealing (conceptually and methodologically) with the complexity inherent in these rich patterns of associations

Risk factors for adult depression: a comprehensive model....



Longitudinal population studies become more valuable with time, and often develop in unexpected ways, yielding outcomes that could not have been predicted at the outset

Thank you – on behalf of the user community - to

- *the NCDS PIs*
 - **Neville Butler, Mia Kellmer Pringle, Ron Davie, John Fox, John Bynner, Heather Joshi, Jane Elliott, Alissa Goodman**
- the cohort maintenance teams
- the survey teams
- the data teams
- The UK Data Service
- CLOSER

and most importantly

- **the cohort members**