Attention-deficit/hyperactivity disorder:

Diagnosis validity, prevalence and access to services

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The ADHD Tsunami? Global perspectives - *UCD Child & Adolescent Psychiatry*
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Shire		x		x	x		
Teva		x					
Editora Manole							x

Oct, 2016

OUTLINE

1. Diagnosis validity
2. Prevalence
3. Access to services

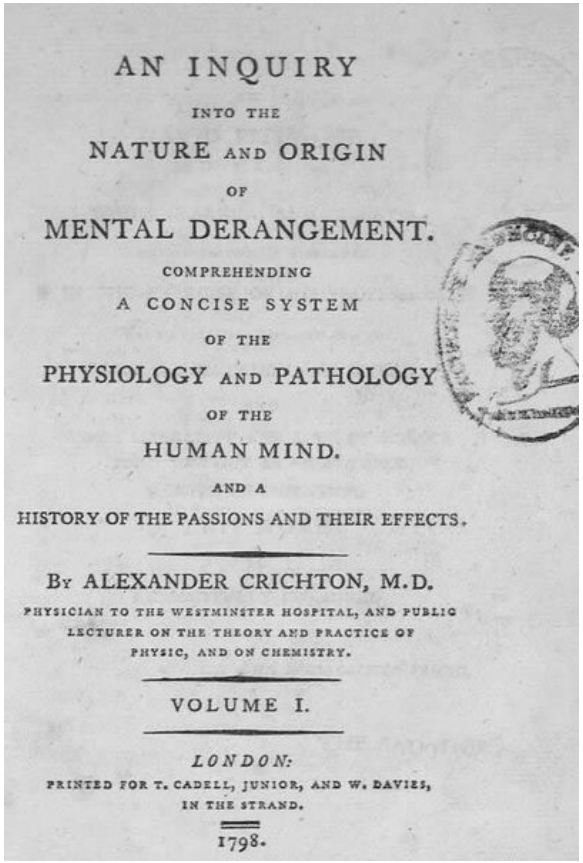
OUTLINE

1 Diagnosis validity

2 Prevalence

3 Access to services

Early descriptions of ADHD



AN INQUIRY

INTO THE

NATURE AND ORIGIN

OF

MENTAL DERANGEMENT.

COMPREHENDING

A CONCISE SYSTEM

OF THE

PHYSIOLOGY AND PATHOLOGY

OF THE

HUMAN MIND.

AND A

HISTORY OF THE PASSIONS AND THEIR EFFECTS.

By ALEXANDER CRICHTON, M.D.

PHYSICIAN TO THE WESTMINSTER HOSPITAL, AND PUBLIC LECTURER ON THE THEORY AND PRACTICE OF PHYSIC, AND ON CHEMISTRY.

VOLUME I.

LONDON:

PRINTED FOR T. CADELL, JUNIOR, AND W. DAVIES, IN THE STRAND.

1798.

An inquiry into the nature and origin of mental derangement Crichton - 1798

"On Attention and its Diseases"

The morbid alterations to which attention is subject, may all be reduced under the two following heads:
First. The incapacity of attending with a necessary degree of constancy to any one object.
Second. A total suspension of its effects on the brain.

The incapacity of attending with a necessary degree of constancy to any one object, almost always arises from an unnatural or morbid sensibility of the nerves, by which means this faculty is incessantly withdrawn from one impression to another. It may be either born with a person, or it may be the effect of accidental diseases.

When born with a person it becomes evident at a very early period of life, and has a very bad effect, inasmuch as it renders him incapable of attending with constancy to any one object of education.
But it seldom is in so great a degree as totally to impede all instruction; and what is very fortunate, it is generally diminished with age.

Lange et al. ADHD Atten Def Hyp Disord 2010; 2:241–55.

Early descriptions of ADHD

The story of Fidgety Philip
Heinrich Hoffmann - 1845

The Goulstonian Lectures
ON
SOME ABNORMAL PSYCHICAL CONDITIONS IN CHILDREN.

Delivered before the Royal College of Physicians of London on March 4th, 6th, and 11th, 1902,

BY GEORGE F. STILL, M.A., M.D. CANTAB., F.R.C.P. LOND.,
ASSISTANT PHYSICIAN FOR DISEASES OF CHILDREN, KING'S COLLEGE HOSPITAL; ASSISTANT PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET.

LECTURE I.

Delivered on March 4th.

MR. PRESIDENT AND GENTLEMEN,—The particular psychical conditions with which I propose to deal in these lectures are those which are concerned with an abnormal defect of moral control in children. Interesting as these disorders may be as an abstruse problem for the professed psychologist to puzzle over, they have a very real practical —shall I say social?—importance which I venture to think has been hardly sufficiently recognised. For some years past I have been collecting observations with a view to investigating the occurrence of defective moral control as a

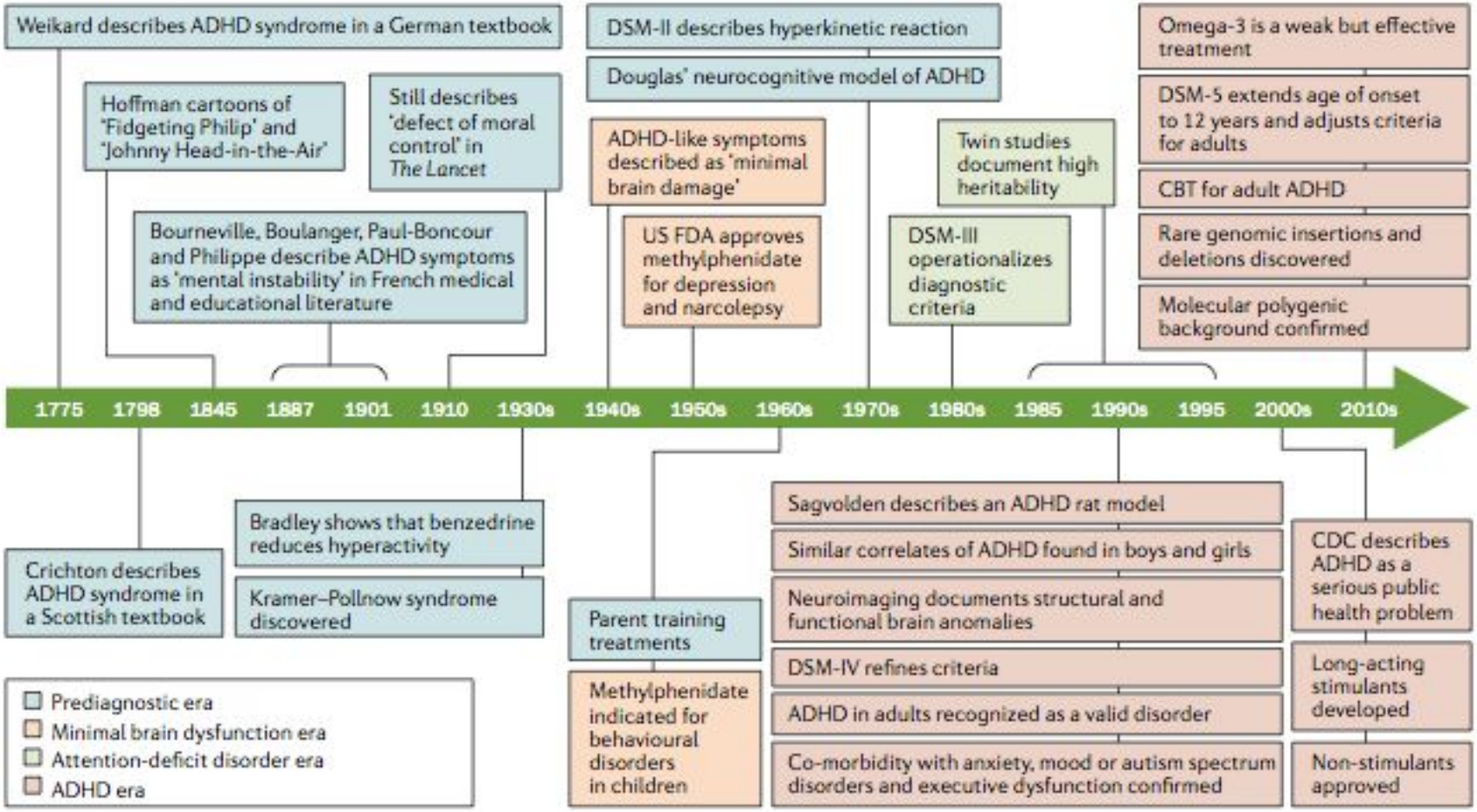
the terms "moral" and "immoral" to connote some sexual relation. The moral control to which I refer has a much wider significance, and its defect in any individual case may have, and indeed often has, no concern whatever with sexual relations; at the same time I would point out that such a definition will cover, not only such activity as is concerned with the good of others, but also with the good of self—in other words, the moral control which I wish to consider is not only the altruistic but also the self-regarding.

Moral control can only exist where there is a cognitive relation to environment. I use the term "cognitive" for lack of a better to imply that capacity for reasoning comparison on which moral control is necessarily based: the term "conscious" would imply too little, the term "intelligent" would imply too much. Out of this cognitive relation arises a consciousness of the relation of every volitional activity on the part of the individual to the good of all and this we may call moral consciousness. Moral control is the control of activity in conformity with this moral consciousness. The capacity for reasoning comparison may be regarded as an intellectual capacity and moral consciousness, inasmuch as it is concerned with more complicated relations, must require a higher degree of this capacity. To this extent moral control also is dependent on intellect; but inasmuch as volition also is concerned in moral control, and volition can hardly be regarded as an intellectual process, it would seem that intellect is not the only factor concerned therein, although it is an essential factor. To this point I shall return again when we come to consider the mental pathology, if I may so say, of defective moral control.

Moral control, it is obvious, is not an attribute of the newly-born child, for the infant only gradually comes into that cognitive relation which must precede the development of

Some abnormal psychical conditions in children
Still. Lancet, 1902

History of ADHD



Faraone et al. Nat Rev Dis Primers 2015;1:15020

Inattentive symptoms – ADHD DSM-5

- Does not give close attention to details or makes careless mistakes
- Has difficulty sustaining attention on tasks or play activities
- Does not seem to listen when directly spoken to
- Does not follow through on instructions and does not finish schoolwork, chores, or duties in the workplace
- Has trouble organizing tasks or activities
- Avoids, dislikes, or is reluctant to do tasks that need sustained mental effort
- Loses things needed for tasks or activities
- Easily distracted
- Forgetful in daily activities

Hyperactivity/impulsivity symptoms – ADHD DSM-5

- Fidgets with or taps hands or feet, or squirms in seat
- Leaves seat in situations when staying seated is expected
- Runs about or climbs when not appropriate (may present as feelings of restlessness in adolescents or adults)
- Unable to play or undertake leisure activities quietly
- “On the go”, acting as if “driven by a motor”
- Talks excessively
- Blurts out answers before a question has been finished
- Has difficulty waiting his/her turn
- Interrupts or intrudes on others

Summary of the clinical assessment process for children

- Obtain detailed clinical history from parents or carers and young person
- Carry out core ADHD symptom assessment: are symptoms out of keeping with child's age and developmental stage?
- Obtain information across settings (questionnaires as adjunct)
- Assess associated difficulties (eg, mental health symptoms, other neurodevelopmental or learning problems)
- Developmental history (eg, motor and language delay)
- Medical history (eg, epilepsy)
- Family history (eg, mental health, educational history, physical health problems)
- Medical histories (eg, cardiac)

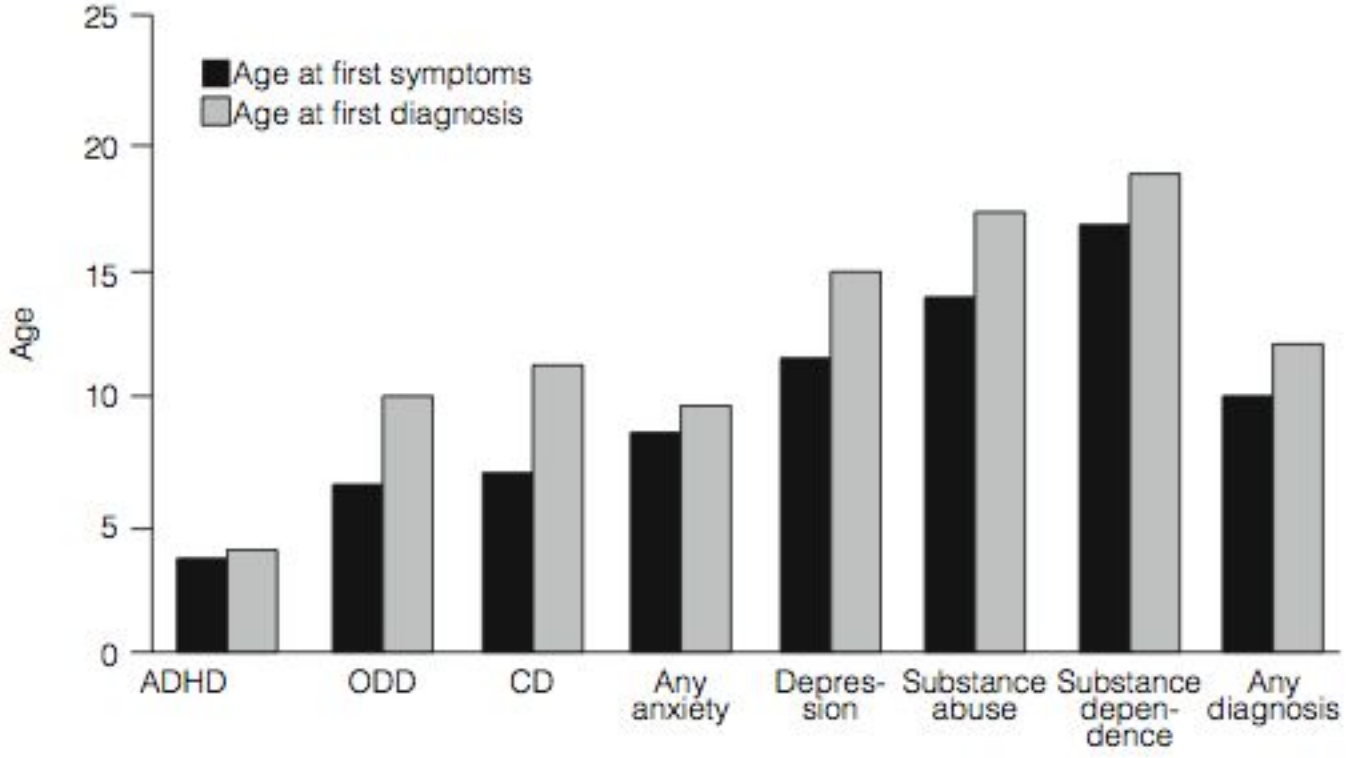
Thapar & Cooper. Lancet 2016;387(10024):1240-50.

Summary of the clinical assessment process for children

- Medical histories especially important in relation to cardiac or other risk factors if pharmacological treatment is being considered
- Consider severity of symptoms, effects on functioning, comorbid symptoms, medical history, and the family and child's strengths, resources, demands, and psychosocial context when deciding on treatment options
- Physical assessment:
  - Signs of other disorders (eg, dysmorphic features, skin lesions) and motor coordination (eg, handwriting, balance); to be undertaken more completely if considering pharmacological treatment
  - Baseline height, weight, blood pressure, pulse

Thapar & Cooper. Lancet 2016;387(10024):1240-50.

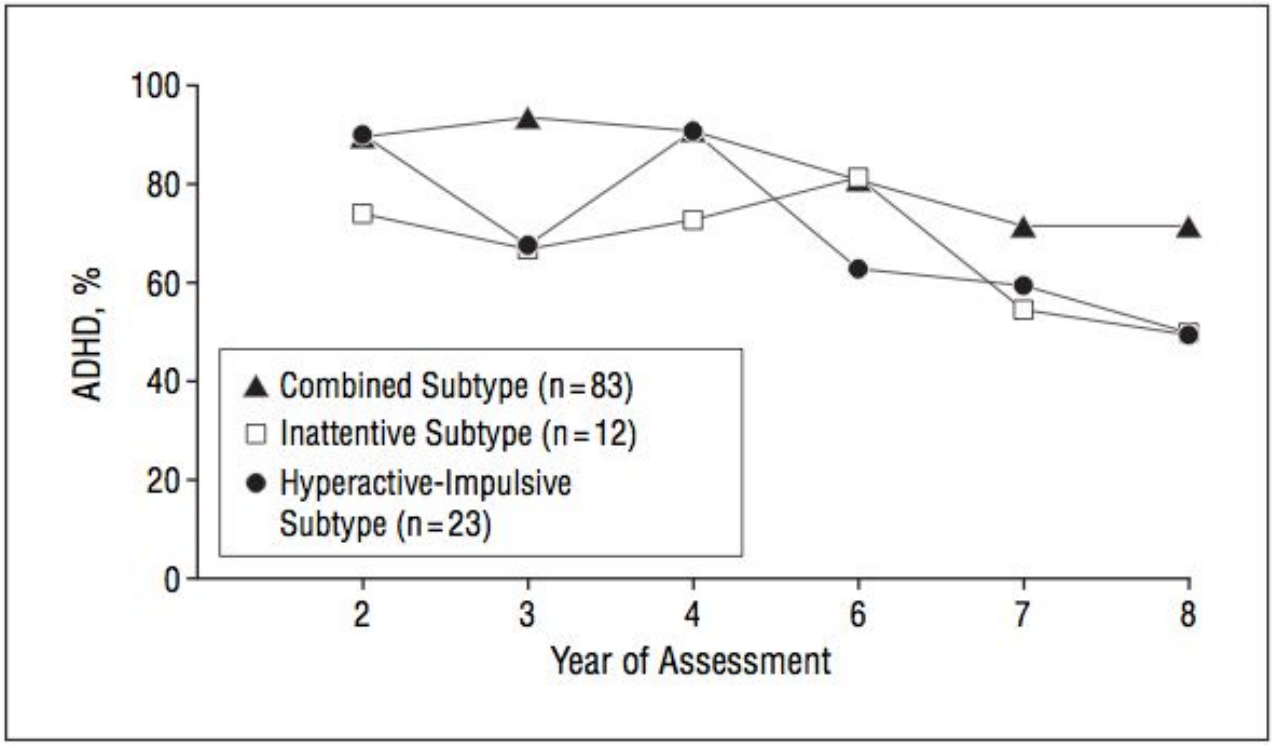
Age at which symptoms of common mental disorders first appear and are diagnosed



[a] Source: Used with permission from Costello EJ, unpublished manuscript. ADHD, attention-deficit hyperactivity disorder; ODD, oppositional defiant disorder; CD, conduct disorder

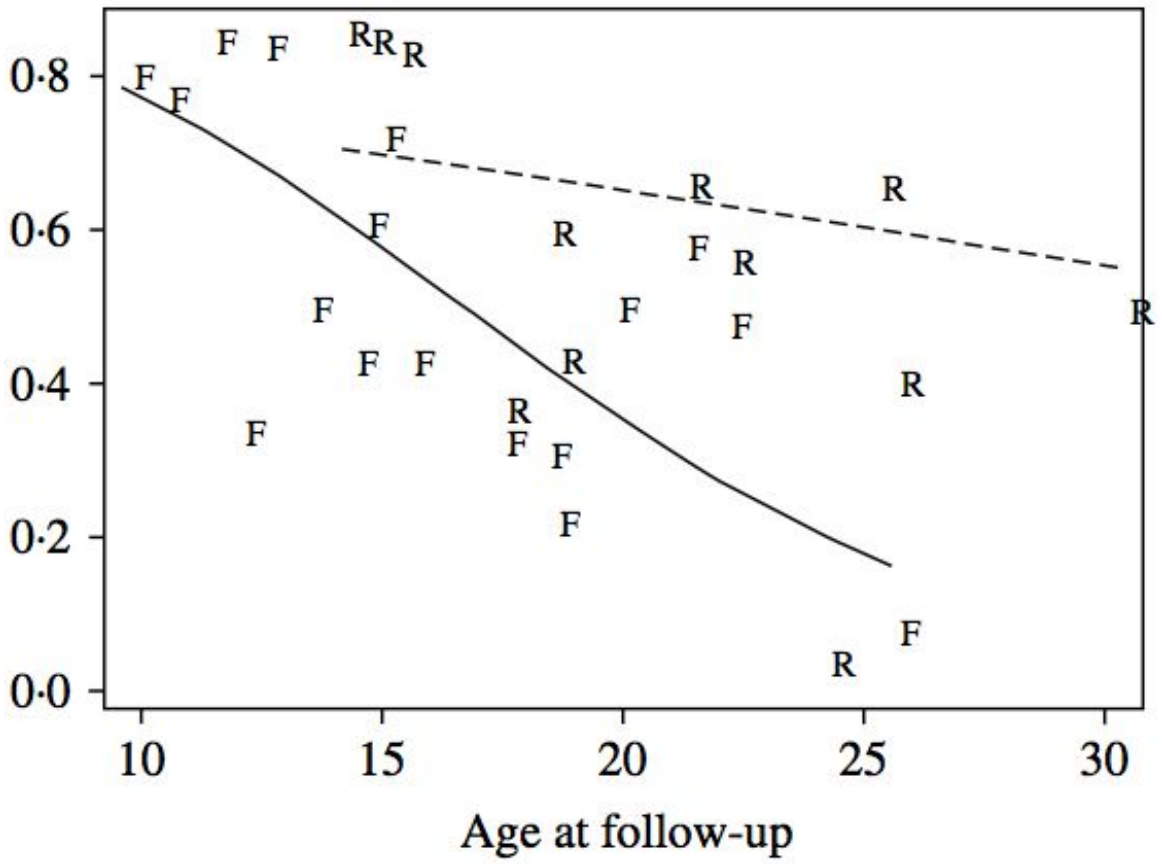
Costello & Angold. Smoky Mountains Study, unpublished.

Persistence of ADHD diagnosis by subtype from ages 4-6 to 11-13 years



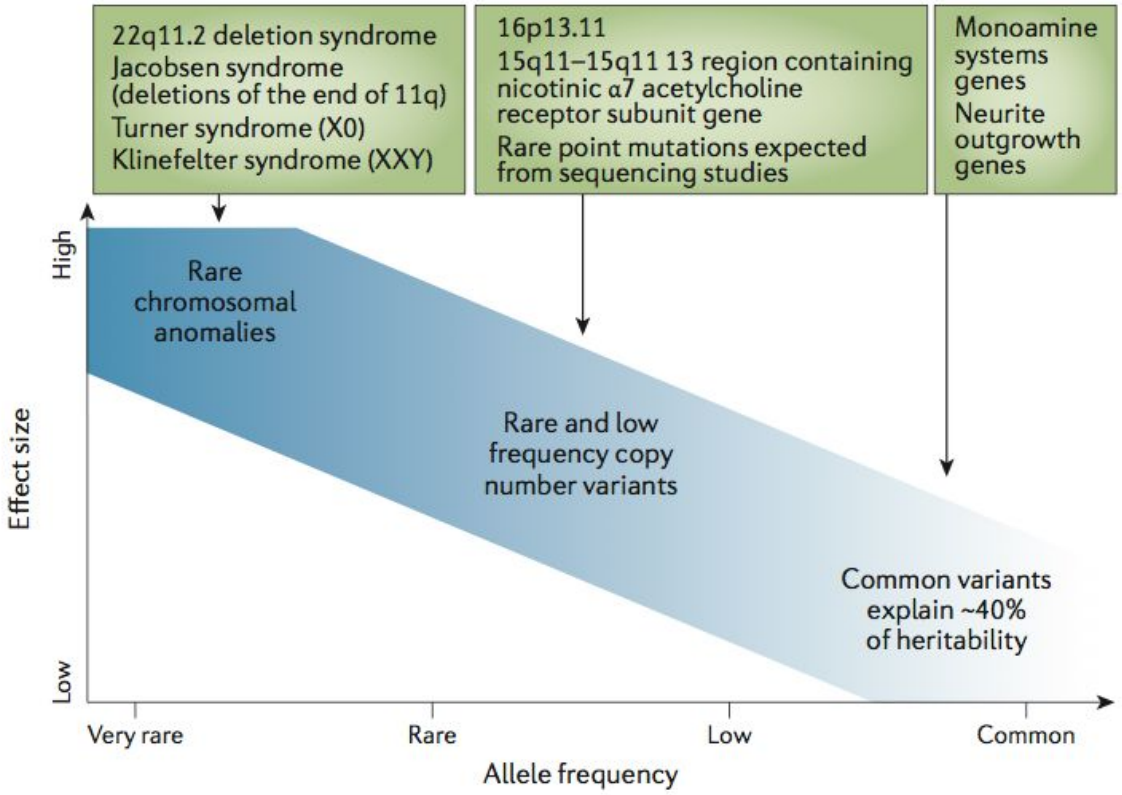
Lahey et al. Arch Gen Psychiatry 2005;62:896-902.

Persistence of full and residual ADHD diagnosis over time

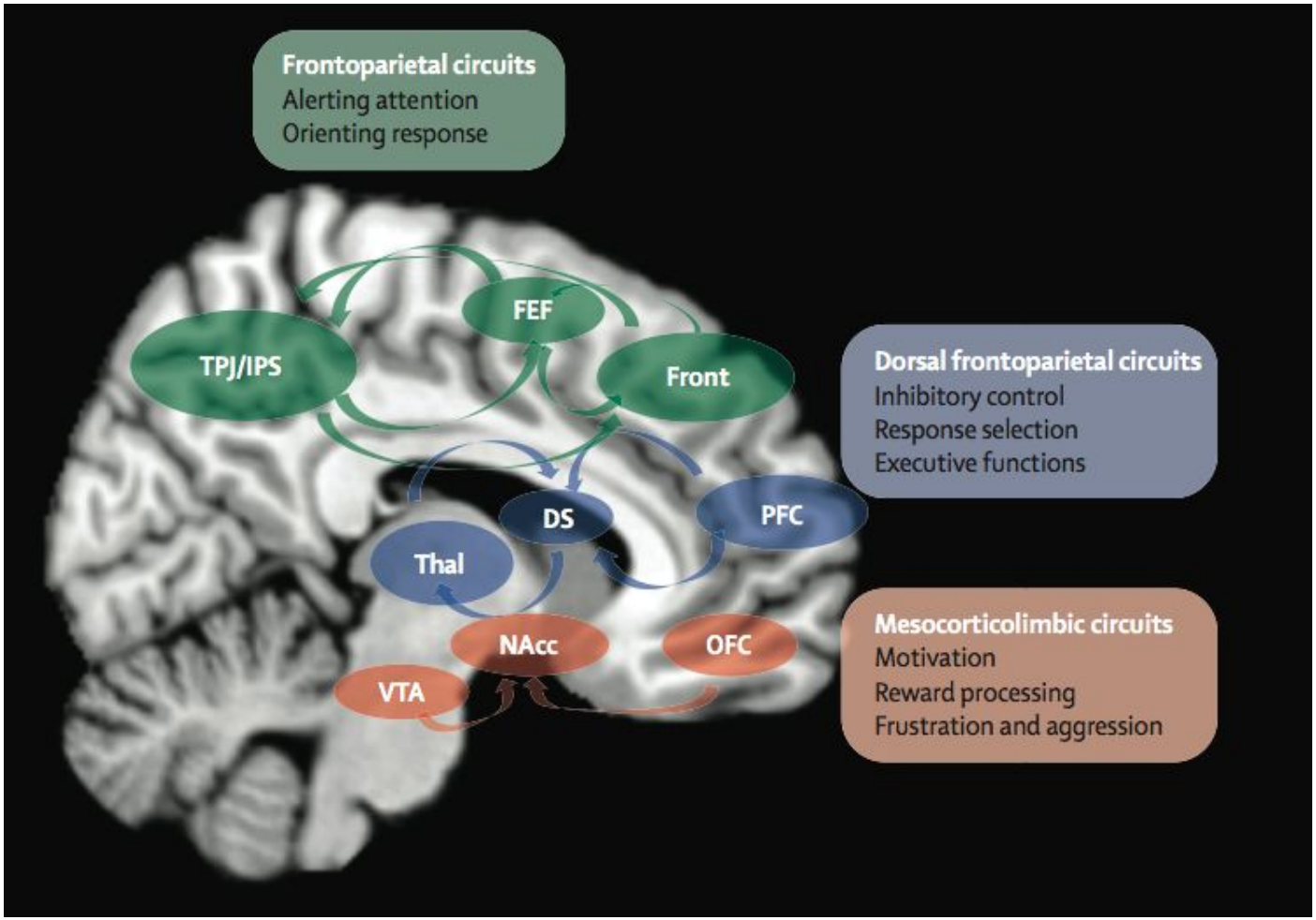


Faraone et al. Psychol Med 2005;35:1-7.

Genetic risk factors for ADHD

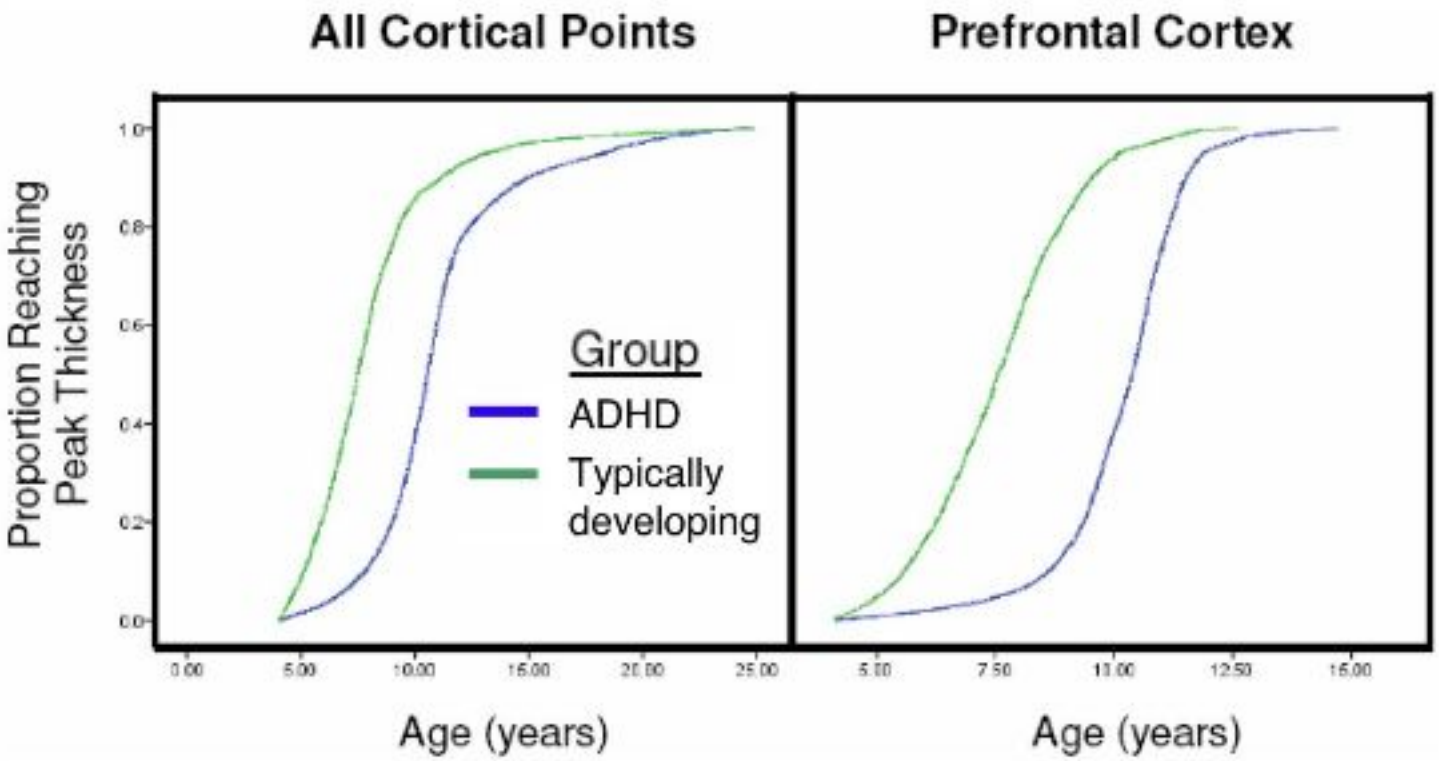


Neural circuits implicated in ADHD



Gallo & Posner. Lancet Psychiatry 2016;3(6):555-67.

ADHD is characterized by a delay in cortical maturation



Shaw et al. PNAS 2007; 104(49):19649-54

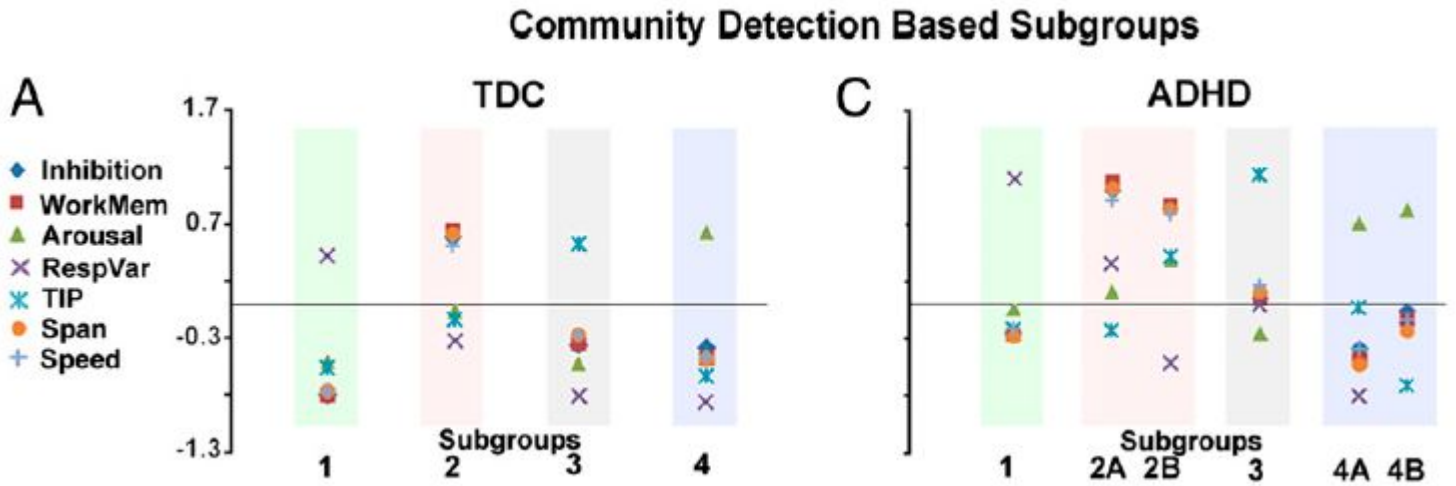
Cognitive deficits in ADHD

- There is no cognitive profile that defines ADHD and significant heterogeneity between individuals.
- Executive functioning deficits: response inhibition, vigilance, working memory, and planning
- Reward disregulation: suboptimal decisions, prefer immediate rather than delayed rewards and over-estimate the magnitude of proximal relative to distal rewards
- Temporal information processing and timing
- Storage aspects of memory
- Reaction time variability and processing speed
- Arousal and activation
- Motor control

Faraone et al. Nat Rev Dis Primers 2015;1:15020
Thapar & Cooper. Lancet 2016;387(10024):1240-50.

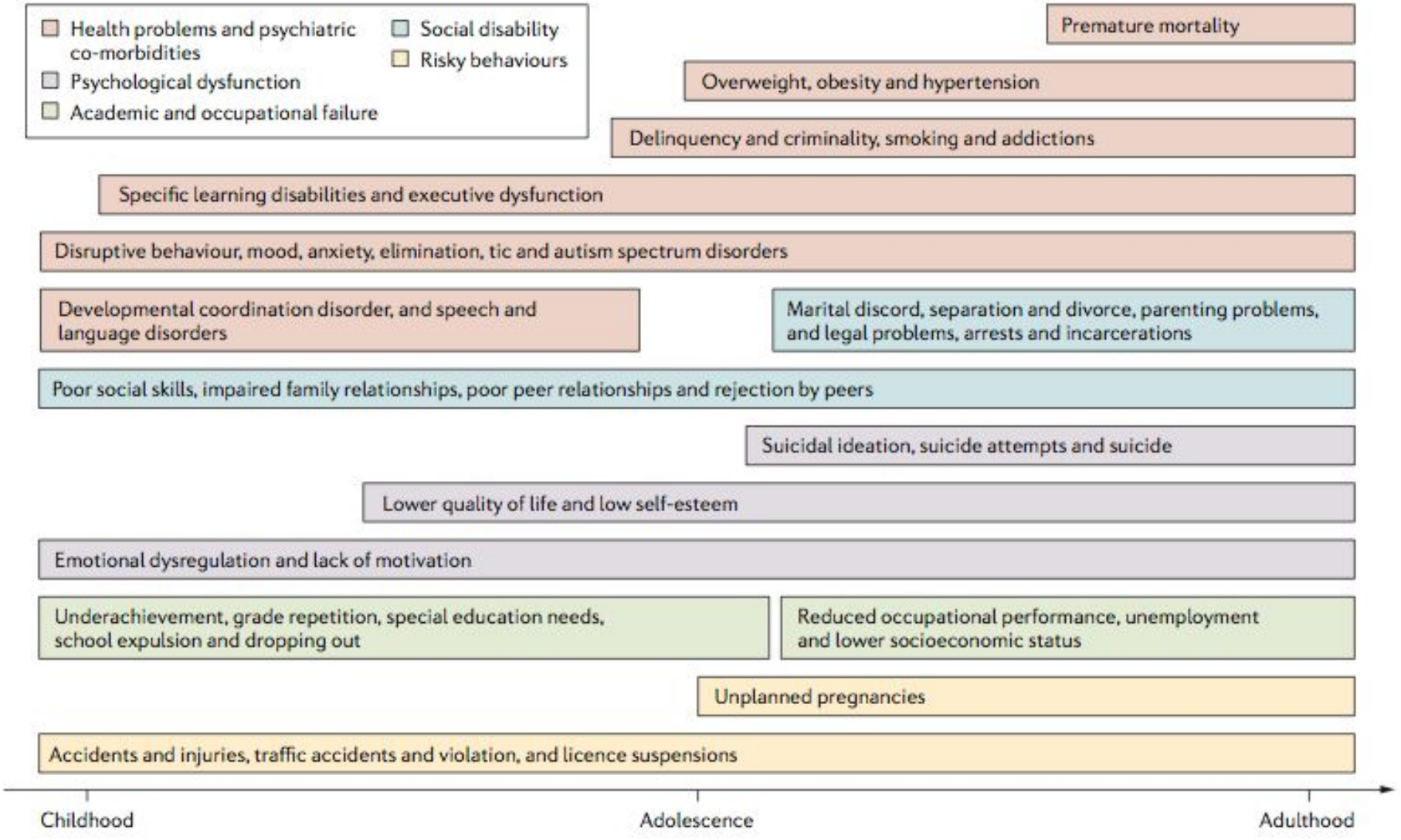
Distinct neuropsychological subgroups in typically developing youth inform heterogeneity in children with ADHD

Damien A. Fair[a,b,c,1], Deepti Bathula[a,d], Molly A. Nikolas[e], and Joel T. Nigg[a,b]



Fair et al. PNAS 2012; 109: 6769-74.

Life consequences of ADHD



Faraone et al. Nat Rev Dis Primers 2015;1:15020

Mortality in children, adolescents, and adults with attention deficit hyperactivity disorder: a nationwide cohort study

Søren Dalsgaard, Søren Dinesen Østergaard, James F Leckman, Preben Bo Mortensen, Marianne Giørtz Pedersen

MRR according to age at first diagnosis of ADHD, compared with those without ADHD at same age

	Number of deaths	Person-years	Mortality rate per 10 000 person-years	Crude model MRR (95% CI)*	Partly adjusted model MRR (95% CI)†	Fully adjusted model MRR (95% CI)‡
Age at first ADHD-diagnosis (years)						
1–5	10	29 944	3·34	2·23 (1·11–3·91)	1·97 (0·99–3·46)	1·86 (0·93–3·27)
6–17	59	136 048	4·34	1·83 (1·40–2·35)	1·63 (1·25–2·09)	1·58 (1·21–2·03)
>17	38	17 057	22·28	5·24 (3·73–7·12)	4·46 (3·18–6·07)	4·25 (3·03–5·78)
No ADHD	5473	24 724 510	2·21	1·00 (reference)	1·00 (reference)	1·00 (reference)
p value§	..	..		p<0·0001	p<0·0001	p<0·0001
Overall cohort	5580	24 907 560	2·24	..	..	..

Dalsgaard S et al. Lancet 2015;385(9983):2190-6.

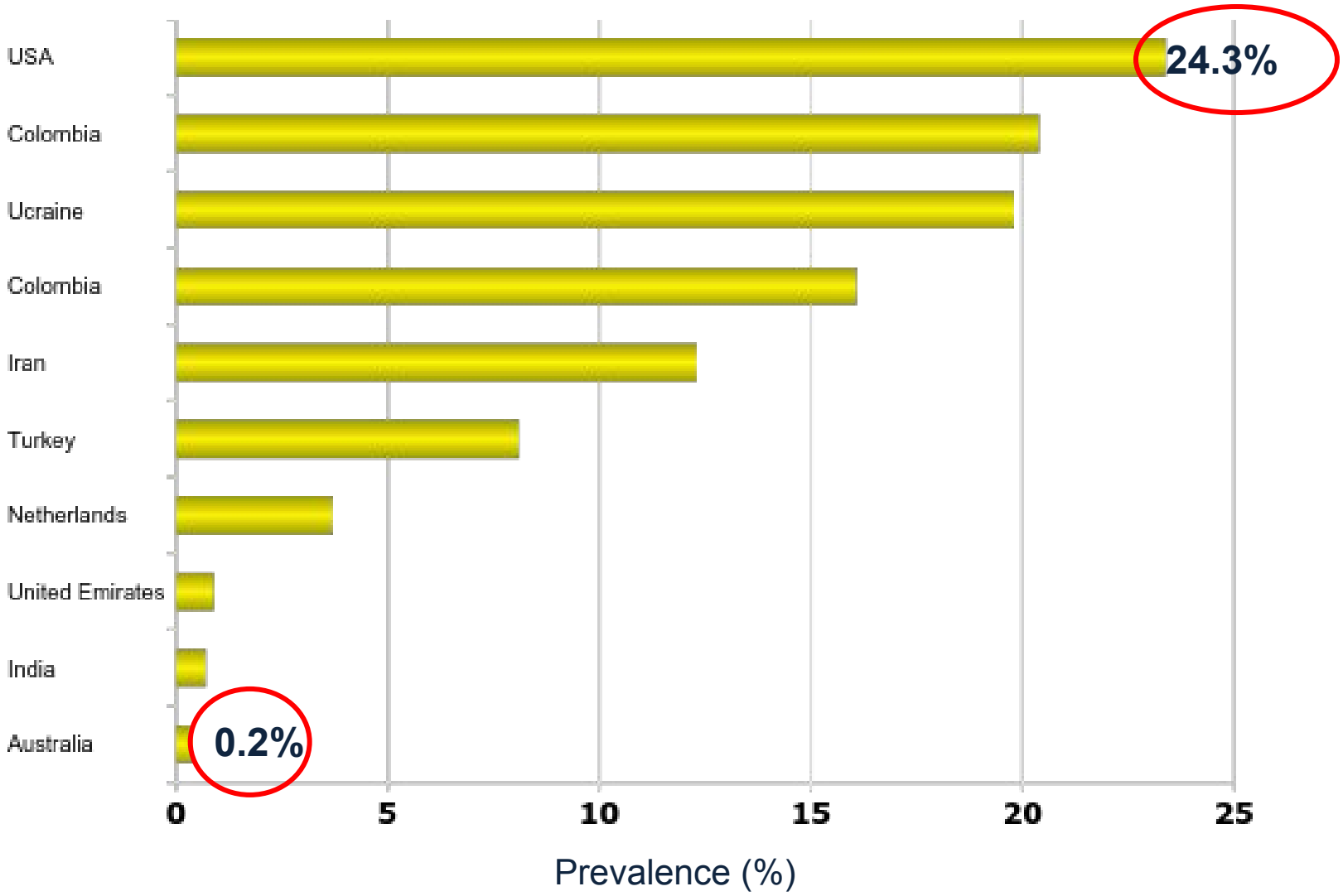
OUTLINE

1 Diagnosis validity

2 Prevalence

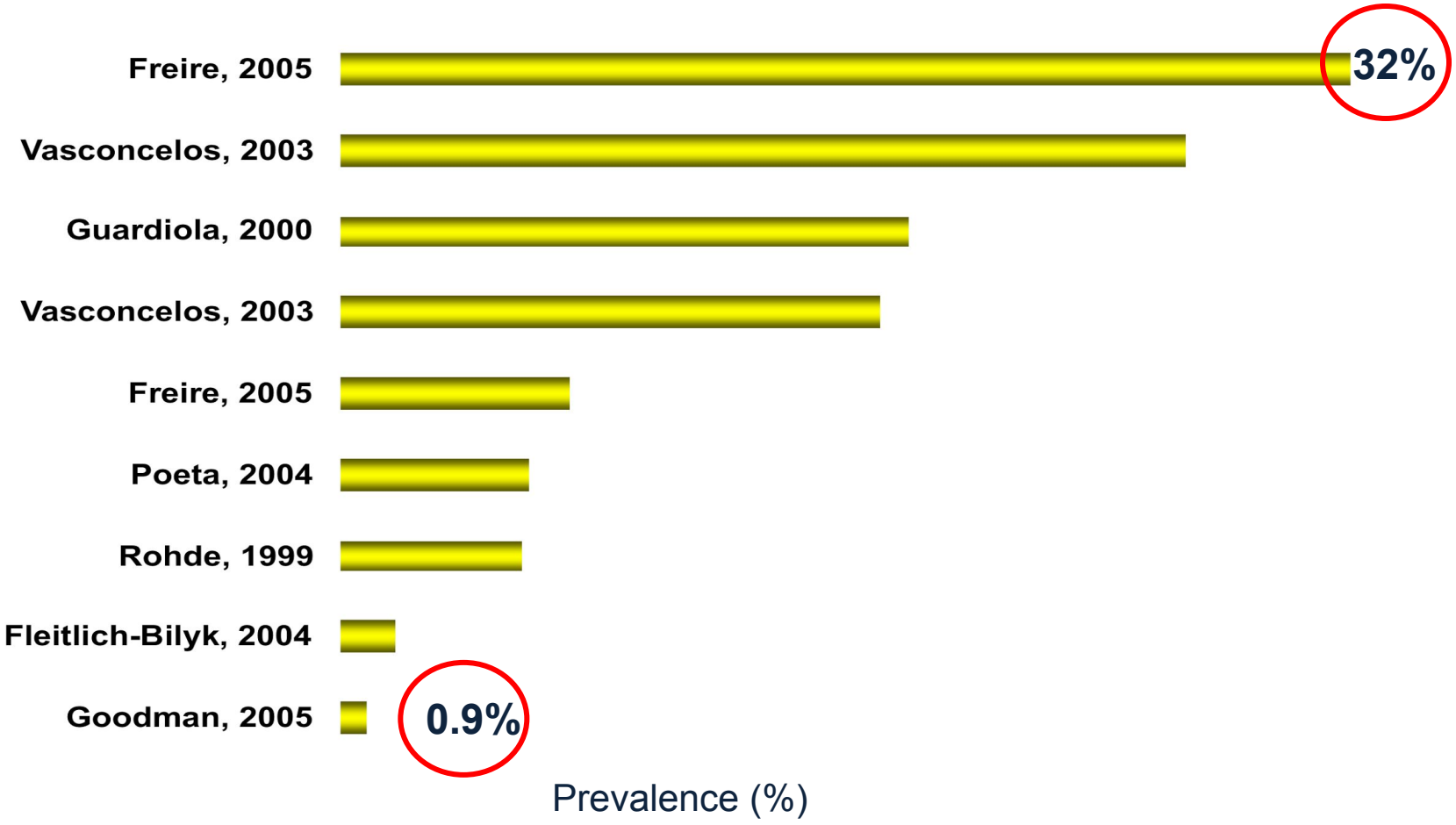
3 Access to services

ADHD prevalence estimates around the world



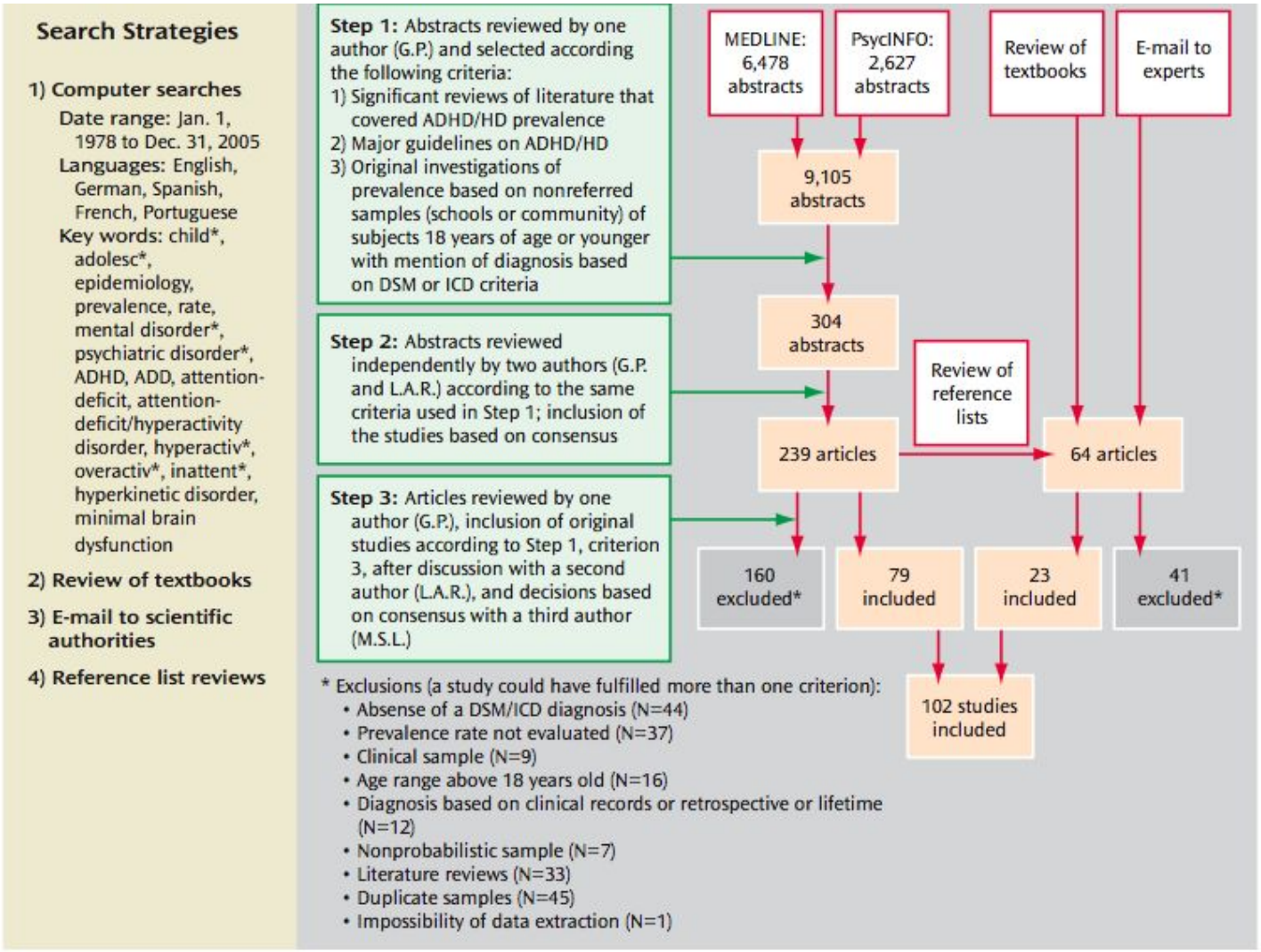
Polanczyk & Jensen. Child Adolesc Psychiatr Clin N Am 2008;17:245-60.

ADHD prevalence estimates in Brazil



Polanczyk & Jensen. Child Adolesc Psychiatr Clin N Am 2008;17:245-60.

Search process for ADHD prevalence studies around the world



Polanczyk et al. Am J Psychiatry 2007;164:942-8.

Location of included studies

K = 102
n = 144 726

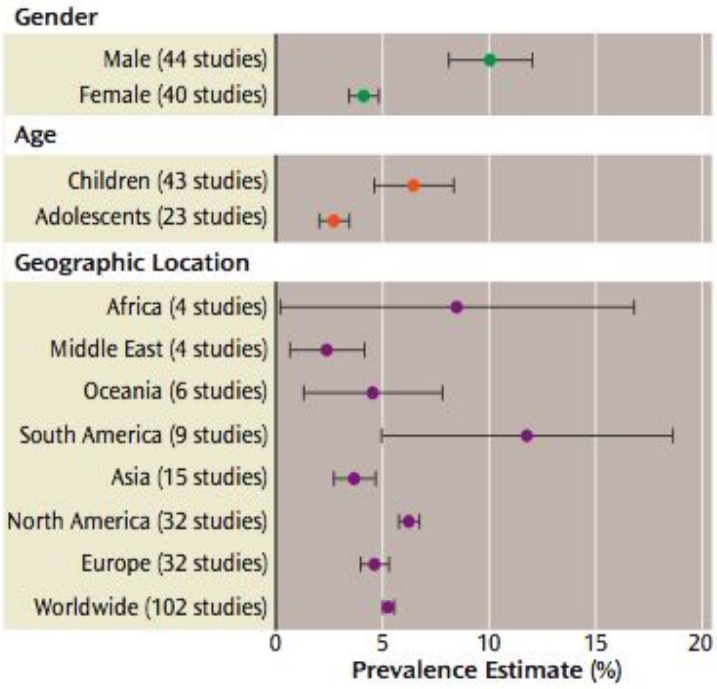
Polanczyk et al. Am J Psychiatry 2007;164:942-8.

Results: meta-regression and meta-analysis

TABLE 2. Association Between Methodological Covariates and Geographic Area With ADHD/HD Prevalence Estimates

Variable	Univariate Model p	Metaregression (Multivariate Model)[a] p
Origin of sample	<0.001	
Community		index
School		0.38
Source of information	<0.001	
Best-estimate procedure		index
"And rule"		0.04
Parents		0.03
"Or rule"		0.003
Teachers		<0.001
Subjects		0.46
Impairment criterion	<0.001	
Yes		index
No		0.001
Diagnostic criteria	<0.001	
DSM-IV		index
DSM-III-R		0.02
DSM-III		0.69
ICD-10		0.005
Number of stages of evaluation	<0.001	
One		index
Two		0.25
Two, only screens positive at first stage[b]		0.31
Response rate	0.25	—
Sample size	<0.001	0.81
Geographic area	0.009	
North America		index
Europe		0.40
Oceania		0.45
South America		0.83
Asia		0.85
Africa		0.03
Middle East		0.01

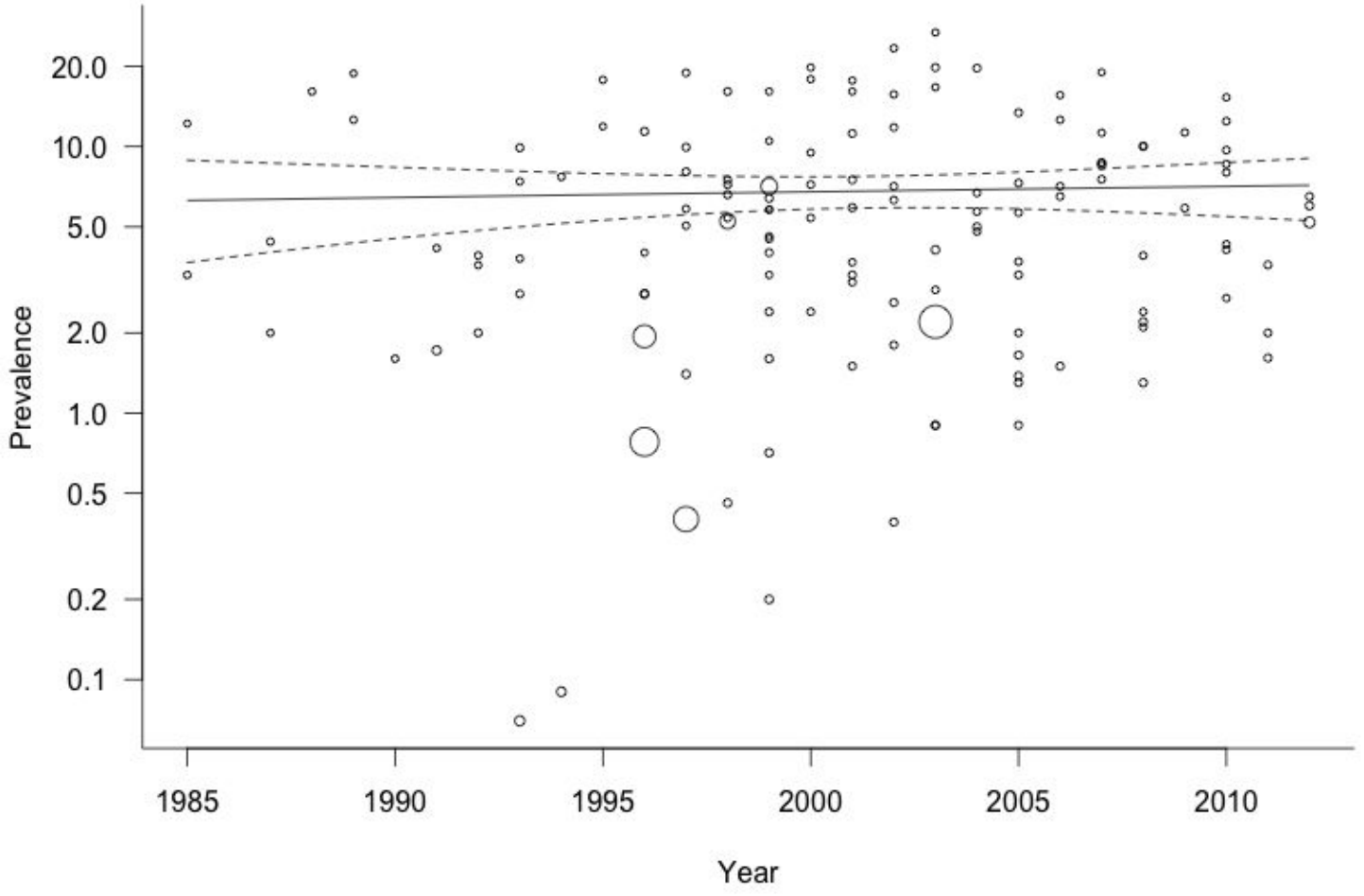
FIGURE 2. ADHD/HD Pooled Prevalence According to Demographic Characteristics and Geographic Location



Polanczyk et al. Am J Psychiatry 2007;164:942-8.

Trends in ADHD diagnosis

Tends in ADHD prevalence estimates (1984-2012)



Polanczyk et al. Int J Epidemiol 2014;43(2):434-42

ORIGINAL CONTRIBUTION

Prevalence, Severity, and Unmet Need for Treatment of Mental Disorders in the World Health Organization World Mental Health Surveys

The WHO World Mental Health Survey Consortium*

Context Little is known about the extent or severity of untreated mental disorders, especially in less-developed countries.

Objective To estimate prevalence, severity, and treatment of *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* mental disorders in 14 countries (6 less developed, 8 developed) in the World Health Organization (WHO) World Mental Health (WMH) Survey Initiative.

Design, Setting, and Participants Face-to-face household surveys of 60 463 community adults conducted from 2001-2003 in 14 countries in the Americas, Europe, the Middle East, Africa, and Asia.

Main Outcome Measures The *DSM-IV* disorders, severity, and treatment were assessed with the WMH version of the WHO Composite International Diagnostic Interview (WMH-CIDI), a fully structured, lay-administered psychiatric diagnostic interview.

Results The prevalence of having any WMH-CIDI/*DSM-IV* disorder in the prior year varied widely, from 4.3% in Shanghai to 26.4% in the United States, with an interquartile range (IQR) of 9.1%-16.9%. Between 33.1% (Colombia) and 80.9% (Nigeria) of 12-month cases were mild (IQR, 40.2%-53.3%). Serious disorders were associated with substantial role disability. Although disorder severity was correlated with probability of treatment in almost all countries, 35.5% to 50.3% of serious cases in developed countries and 76.3% to 85.4% in less-developed countries received no treatment in the 12 months before the interview. Due to the high prevalence of mild and subthreshold cases, the number of those who received treatment far exceeds the number of untreated serious cases in every country.

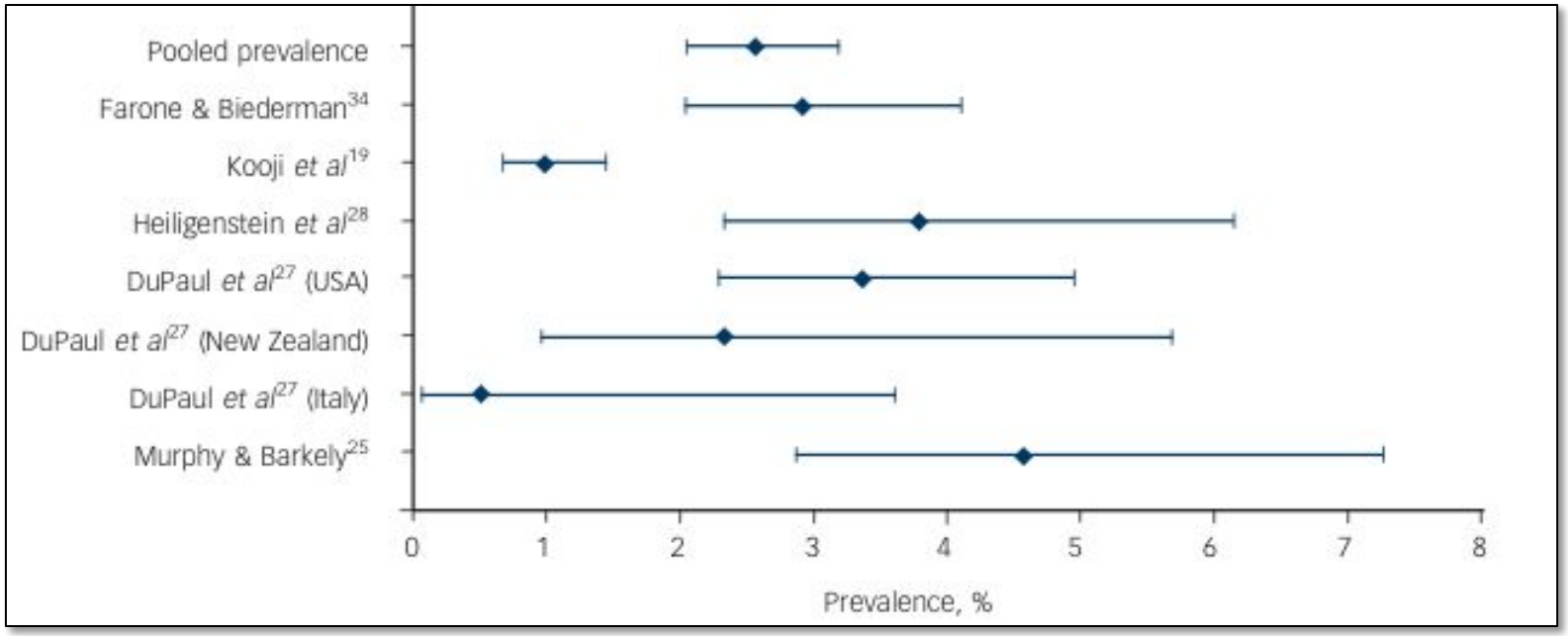
Conclusions Reallocation of treatment resources could substantially decrease the problem of unmet need for treatment of mental disorders among serious cases. Structural barriers exist to this reallocation. Careful consideration needs to be given to the value of treating some mild cases, especially those at risk for progressing to more serious disorders.

JAMA. 2004;291:2581-2590 www.jama.com

Table 2 Multiply imputed prevalence estimates of adult attention-deficit hyperactivity disorder

Country	Prevalence, % (s.e.)	*n*
Belgium	4.1 (1.5)	486
Colombia	1.9[1] (0.5)	1731
France	7.3[2] (1.8)	727
Germany	3.1 (0.8)	621
Italy	2.8 (0.6)	853
Lebanon	1.8[1] (0.7)	595
Mexico	1.9[1] (0.4)	1736
Netherlands	5.0 (1.6)	516
Spain	1.2[1] (0.6)	960
USA[3]	5.2 (0.6)	3197
Total	3.4 (0.4)	11 422

Adult ADHD prevalence



Simon et al. Br J Psychiatry 2009;194:204-11.

Is Adult ADHD a Childhood-Onset Neurodevelopmental Disorder? Evidence From a Four-Decade Longitudinal Cohort Study

Terrie E. Moffitt, Ph.D., Renate Houts, Ph.D., Philip Asherson, M.D., Daniel W. Belsky, Ph.D., David L. Corcoran, Ph.D., Maggie Hammerle, B.A., HonaLee Harrington, B.A., Sean Hogan, M.S.W., Madeline H. Meier, Ph.D., Guilherme V. Polanczyk, M.D., Richie Poulton, Ph.D., Sandhya Ramrakha, Ph.D., Karen Sugden, Ph.D., Benjamin Williams, B.A., Luis Augusto Rohde, M.D., Avshalom Caspi, Ph.D.

Objective: Despite a prevailing assumption that adult ADHD is a childhood-onset neurodevelopmental disorder, no prospective longitudinal study has described the childhoods of the adult ADHD population. The authors report follow-back analyses of ADHD cases diagnosed in adulthood, alongside follow-forward analyses of ADHD cases diagnosed in childhood, in one cohort.

Method: Participants belonged to a representative birth cohort of 1,037 individuals born in Dunedin, New Zealand, in 1972 and 1973 and followed to age 38, with 95% retention. Symptoms of ADHD, associated clinical features, comorbid disorders, neuropsychological deficits, genome-wide association study-derived polygenic risk, and life impairment indicators were assessed. Data sources were participants, parents, teachers, informants, neuropsychological test results, and administrative records. Adult ADHD diagnoses used DSM-5 criteria, apart from onset age and cross-setting corroboration, which were study outcome measures.

Results: As expected, childhood ADHD had a prevalence of 6% (predominantly male) and was associated with childhood comorbid disorders, neurocognitive deficits, polygenic risk, and residual adult life impairment. Also as expected, adult ADHD had a prevalence of 3% (gender balanced) and was associated with adult substance dependence, adult life impairment, and treatment contact. Unexpectedly, the childhood ADHD and adult ADHD groups comprised virtually nonoverlapping sets; 90% of adult ADHD cases lacked a history of childhood ADHD. Also unexpectedly, the adult ADHD group did not show tested neuropsychological deficits in childhood or adulthood, nor did they show polygenic risk for childhood ADHD.

Conclusions: The findings raise the possibility that adults presenting with the ADHD symptom picture may not have a childhood-onset neurodevelopmental disorder. If this finding is replicated, then the disorder's place in the classification system must be reconsidered, and research must investigate the etiology of adult ADHD.

Am J Psychiatry 2015; 172:967–977; doi: 10.1176/appi.ajp.2015.14101266

Dunedin Longitudinal Study

Age	Year	Number	Percent*
Birth	1972-73		
3	1975-76	1037	**100%**
5	1977-78	991	96
7	1979-80	954	92
9	1981-82	955	92
11	1983-84	925	90
13	1985-86	850	82
15	1987-88	976	95
18	1990-91	993	97
21	1993-94	992	97
26	1998-99	980	96
32	2004-05	972	96
38	**2010-12**	**961**	**95%**

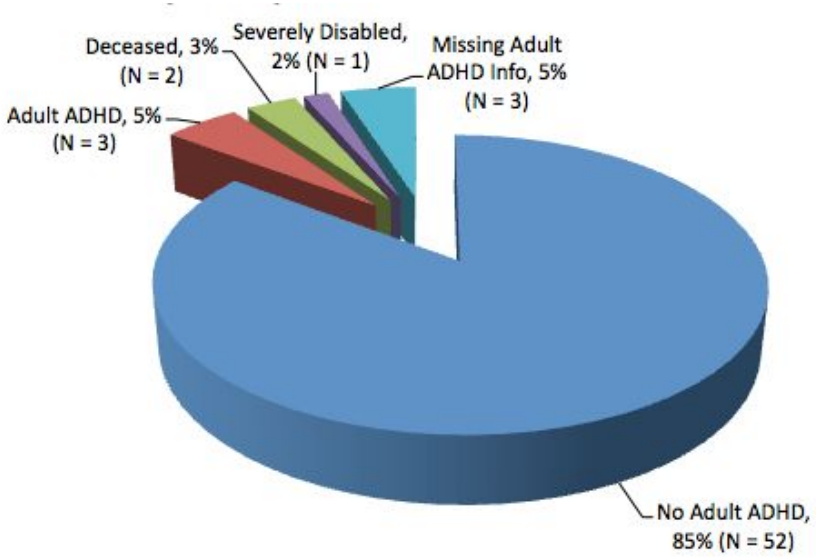
Prevalence

- Research diagnoses based on DSM-III criteria identified 61 children (ages 11, 13, 15) with ADHD - prevalence: 6%, 78.7% male (vs ctrl, $p<0.001$)
- Research diagnoses based on DSM-5* identified 31 adults (age 38) with ADHD - prevalence: 3%, 61.3% male (vs ctrl, $p=.187$)

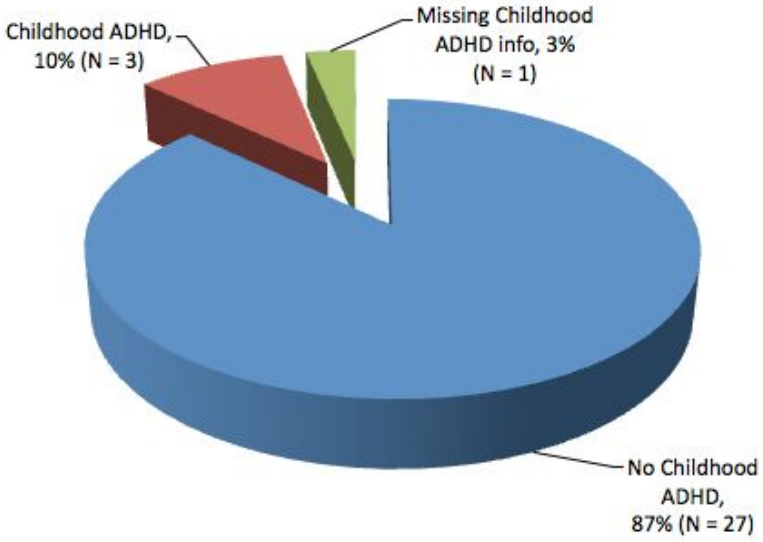
*except age of onset

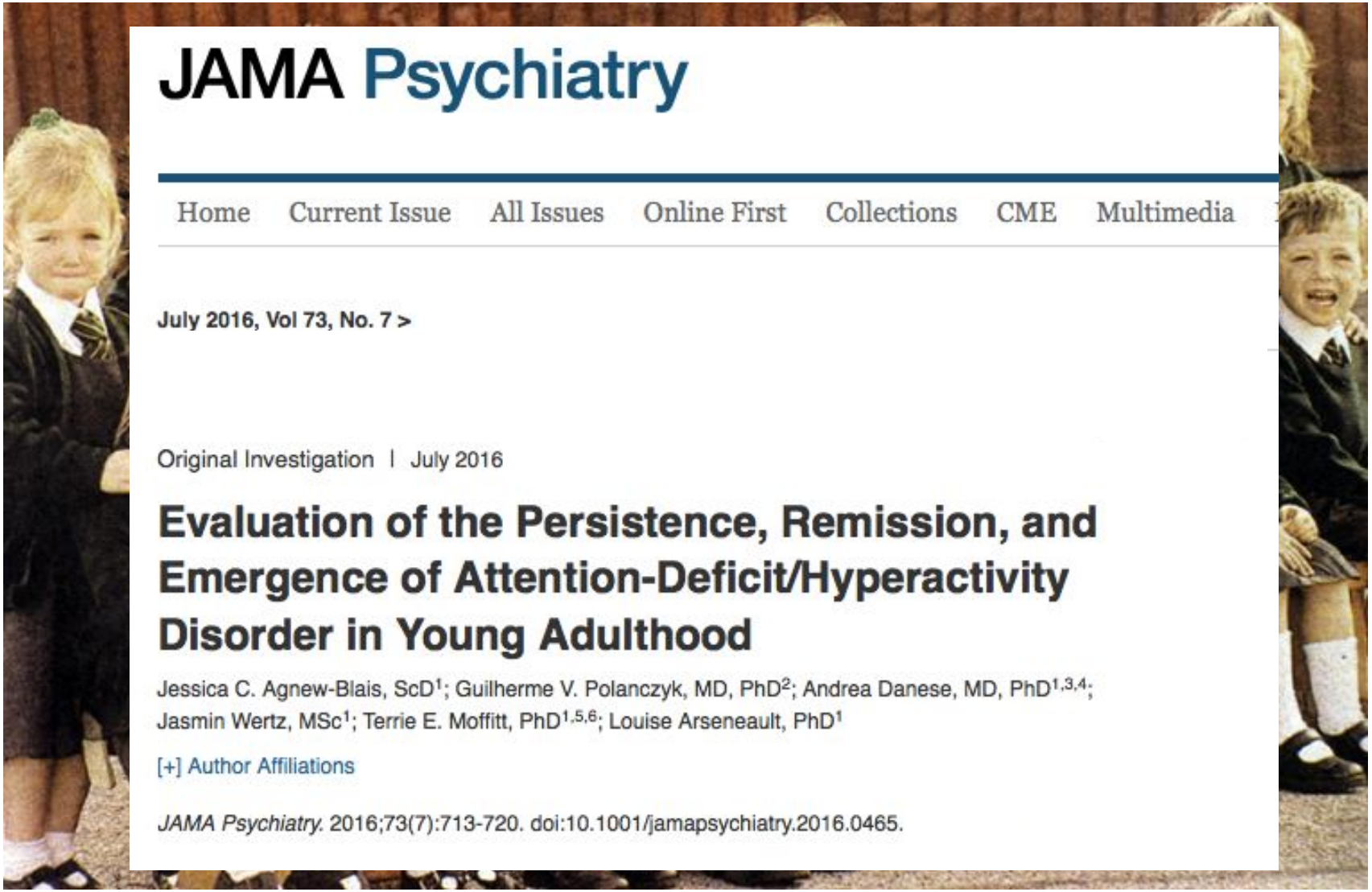
Continuity

Follow-Forward: Did those with childhood ADHD (N = 61) continue to have Adult ADHD?



Follow-Back: Did those with Adult ADHD (N = 31) have prior childhood ADHD?





JAMA Psychiatry

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July 2016, Vol 73, No. 7 >

Original Investigation | July 2016

Evaluation of the Persistence, Remission, and Emergence of Attention-Deficit/Hyperactivity Disorder in Young Adulthood

Jessica C. Agnew-Blais, ScD[1]; Guilherme V. Polanczyk, MD, PhD[2]; Andrea Danese, MD, PhD[1,3,4]; Jasmin Wertz, MSc[1]; Terrie E. Moffitt, PhD[1,5,6]; Louise Arseneault, PhD[1]

[+] Author Affiliations

JAMA Psychiatry. 2016;73(7):713-720. doi:10.1001/jamapsychiatry.2016.0465.

Original Investigation

Attention-Deficit/Hyperactivity Disorder Trajectories From Childhood to Young Adulthood

Evidence From a Birth Cohort Supporting a Late-onset Syndrome

Arthur Caye; Thiago Botter-Maio Rocha, MD, MSc; Luciana Anselmi, PhD; Joseph Murray, PhD; Ana M. B. Menezes, PhD; Fernando C. Barros, PhD; Helen Gonçalves, PhD; Fernando Wehrmeister, PhD; Christina M. Jensen, MSc; Hans-Christoph Steinhausen, MD, PhD, DMSc; James M. Swanson, PhD; Christian Kieling, MD, PhD; Luis Augusto Rohde, MD, PhD

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OUTLINE

1 Diagnosis validity

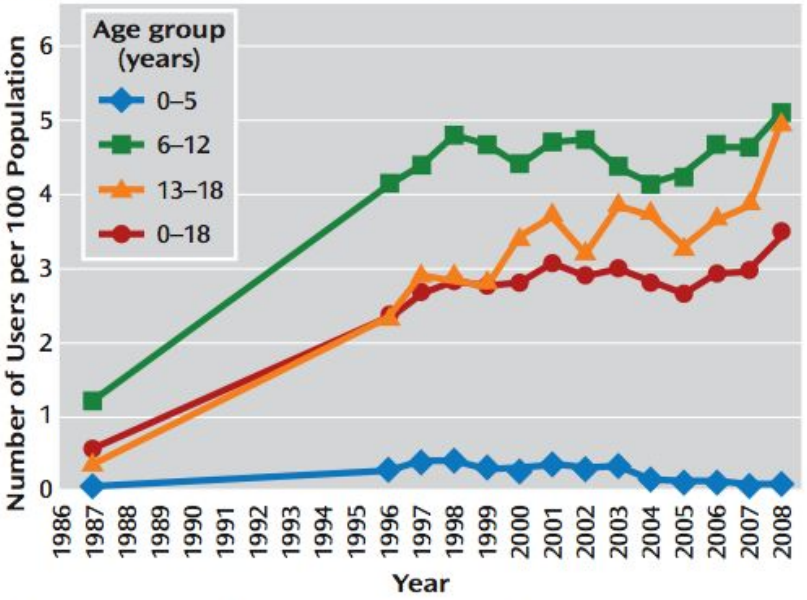
2 Prevalence

3 Access to services

Article

Stimulant Medication Use in Children: A 12-Year Perspective

FIGURE 1. Trends in Prevalence of Stimulant Use in the U.S. Population Age 18 and Younger, 1987–2008[a]



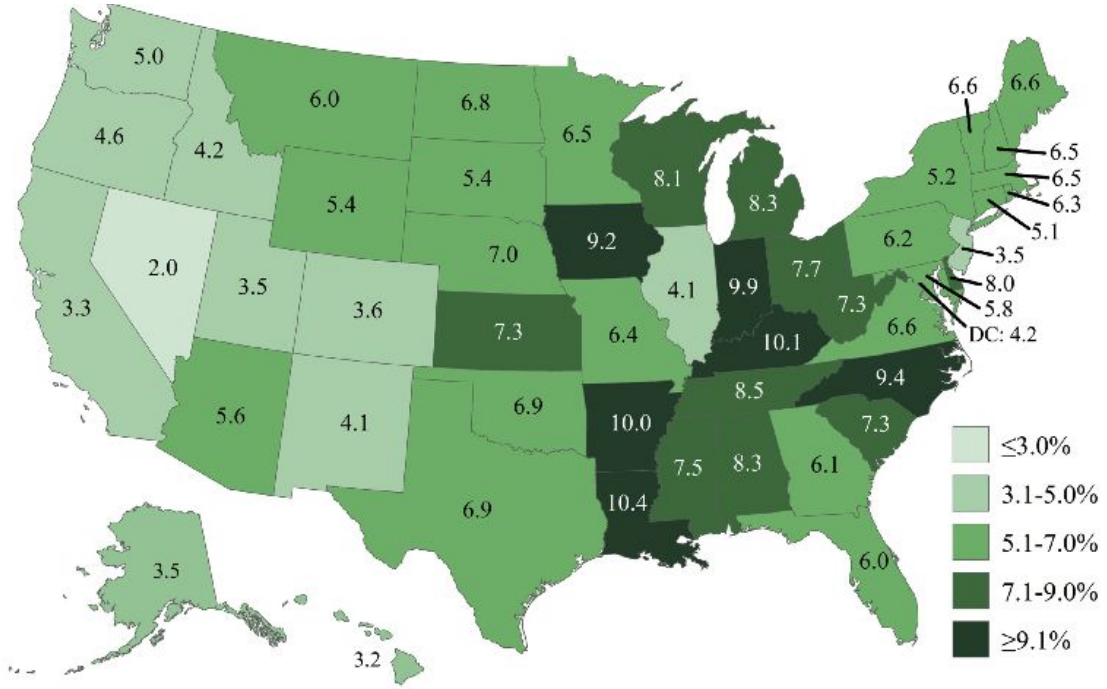
[a] Based on the Medical Expenditure Panel Survey (1996–2008) and the National Medical Expenditure Survey (1987).

Zuvekas et al. Am J Psychiatry 2012; 169:160–166

Estimated prevalence of parent-reported current ADHD medication treatment among children and adolescents by state of United States in 2011

6.1% (3.5 million nationwide) were receiving ADHD medication treatment

69.0% of those with a current ADHD diagnosis were taking ADHD medication



Visser et al. JAACAP 2014;53(1):34-46.

ARTICLE

Medication Use in US Youth With Mental Disorders

Kathleen R. Merikangas, PhD; Jian-ping He, MSc; Judith Rapoport, MD; Benedetto Vitiello, MD; Mark Olfson, MD

Objective: To evaluate the prevalence, demographic and clinical correlates, and specificity of classes of psychotropic medications indicated for mental disorders.

Design: Cross-sectional survey.

Setting: Direct household interviews of combined household and school samples representative of the general population of adolescents in the United States.

Participants: Ten thousand one hundred twenty-three adolescents aged 13 to 18 years who participated in the National Comorbidity Survey Adolescent Supplement.

Main Exposures: *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition) (*DSM-IV*) mental disorders and neurodevelopmental disorders.

Outcome Measure: Psychotropic medication use in the past 12 months.

Results: Among youth with any *DSM-IV* mental disorder, 14.2% reported that they had been treated with a psychotropic medication in the past 12 months. Strong associations emerged between specific disorders and classes of medications with evidence for efficacy. Antidepressants were most frequently used among those with primary mood disorders (14.1%); stimulant use was most common among those with attention-deficit/hyperactivity disorder (20.4%); and antipsychotic use was infrequent and mostly seen among those with serious developmental disorders. Less than 2.5% of adolescents without a 12-month mental disorder had been prescribed psychotropic medications, and most had evidence of psychological distress or impairment reflected in a previous mental disorder, subthreshold condition, or developmental disorder. Appropriate medication use was significantly more frequent among those in treatment in the mental health specialty sector than general medicine or other settings.

Conclusions: These findings challenge recent concerns over widespread overmedication and misuse of psychotropic medications in US youth. In fact, these data highlight the need for greater recognition and appropriate treatment of youth with mental health disorders.

JAMA Pediatr. 2013;167(2):141-148.
Published online December 3, 2012.
doi:10.1001/jamapediatrics.2013.431

Table 1. Prevalence of Psychotropic Medication by Medication Class Among Those With 12-Month *DSM-IV* Disorder

12-mo Conditions[a]: *DSM-IV* Disorders	Sample Size	% (95% CI)						
		Use of Psychotropic Medication						Received Specialty Mental Health Treatment[c]
		Antidepressants	Stimulants	Antipsychotics	Mood Stabilizers	Anxiolytics	Any Medication[b]	
Any anxiety disorder	1950	7.1 (5.5-9.1)	2.9 (1.8-4.7)	1.0 (0.5-1.8)	0.7 (0.4-1.0)	1.9 (1.1-3.3)	11.6 (9.2-14.4)	21.2 (16.8-26.3)
Agoraphobia	192	4.5 (1.8-10.9)	3.0 (0.9-9.5)	0.7 (0.2-2.1)	0.6 (0.1-2.8)	1.4 (0.4-4.9)	9.5 (6.0-14.7)	28.8 (17.5-43.6)
Generalized anxiety disorder	63	16.3 (7.9-30.6)	0.6 (0.1-4.8)	2.8 (0.4-15.8)	0.3 (0.0-2.2)	1.4 (0.3-7.3)	20.2 (10.9-34.4)	35.7 (17.1-60.1)
Social phobia	516	7					0-15.3)	29.9 (19.2-43.2)
Specific phobia	1244	5					8-13.9)	15.2 (11.6-19.7)
Panic disorder	191	17					.3-32.0)	26.5 (16.9-38.9)
Posttraumatic stress disorder	292	16					.1-29.9)	41.3 (31.5-51.8)
Separation anxiety disorder	143	11					8-29.9)	25.7 (11.6-47.8)
ADHD	437	14					.1-41.6)	35.7 (29.0-42.9)
Any behavior disorder	725	9.3 (7.1-12.1)	9.5 (6.5-13.6)	2.1 (1.1-3.9)	1.7 (0.8-3.7)	2.1 (0.9-5.1)	19.3 (15.7-23.5)	39.5 (34.2-45.0)
Conduct disorder	514	8.4 (5.9-12.0)	10.0 (6.2-15.7)	1.9 (1.0-3.6)	1.9 (0.9-4.1)	2.8 (1.1-6.9)	20.1 (15.4-25.6)	42.3 (35.7-49.1)
Oppositional defiant disorder	348	11.2 (7.8-16.0)	13.2 (8.5-19.9)	2.6 (0.9-6.7)	1.8 (0.6-5.3)	2.7 (0.7-10.1)	23.5 (18.7-29.1)	43.1 (36.5-50.0)
Any eating disorder	161	13.1 (6.4-25.0)	8.4 (3.0-21.2)	0.8 (0.3-2.3)	0.1 (0.0-0.8)	1.3 (0.5-3.7)	19.3 (10.8-32.0)	55.0 (35.8-72.9)
Any mood disorder	1021	14.1 (10.6-18.4)	5.4 (3.3-8.8)	1.2 (0.6-2.4)	0.8 (0.4-1.6)	2.9 (1.6-5.3)	19.7 (15.5-24.7)	35.0 (28.3-42.4)
Bipolar	246	14.2 (9.4-20.9)	5.8 (2.4-13.1)	2.6 (0.9-7.5)	1.4 (0.4-4.8)	2.1 (0.6-7.2)	18.0 (12.9-24.6)	33.8 (23.1-46.4)
Depression	788	14.1 (10.4-18.8)	5.4 (3.0-9.5)	0.7 (0.3-1.7)	0.6 (0.2-1.3)	3.1 (1.6-6.1)	20.2 (15.5-25.8)	35.3 (27.9-43.5)
Any substance use disorder[d]	854	9.2 (6.7-12.6)	4.1 (2.5-6.7)	1.1 (0.5-2.3)	1.0 (0.5-2.0)	2.7 (1.3-5.3)	14.4 (11.2-18.3)	35.9 (27.0-45.9)
Any class of disorder[e]	2350	7.8 (6.5-9.3)	6.6 (5.0-8.5)	1.0 (0.6-1.6)	0.7 (0.4-1.2)	1.3 (0.7-2.2)	14.2 (12.2-16.5)	24.9 (21.7-28.4)
0 class	4133	1.3 (0.9-1.9)	0.8 (0.5-1.3)	0.2 (0.1-0.7)	0.0 (0.0-0.2)	0.2 (0.1-0.4)	2.5 (1.8-3.4)	6.6 (5.5-8.0)
1 class	1469	4.7 (3.3-6.7)	5.0 (3.2-7.7)	0.8 (0.3-2.1)	0.3 (0.1-0.8)	0.7 (0.3-1.5)	9.5 (7.0-12.7)	16.0 (12.9-19.6)
2 classes	596	10.9 (7.8-14.9)	9.0 (5.0-15.6)	0.4 (0.2-0.9)	1.7 (0.7-4.1)	1.5 (0.8-3.0)	19.4 (14.1-26.0)	32.9 (27.1-39.4)
≥3 classes	285	16.1 (10.8-23.3)	9.6 (5.3-16.8)	2.5 (1.2-5.1)	1.0 (0.4-2.9)	3.4 (1.0-10.8)	26.0 (18.6-35.2)	50.9 (37.8-63.9)
Suicidality	515	18.5 (13.8-24.3)	6.2 (2.9-12.9)	2.3 (1.1-4.8)	2.1 (1.2-3.4)	4.3 (2.2-8.4)	27.1 (21.4-33.6)	45.3 (37.7-53.1)
Neurodevelopmental disorder[f]	1675	6.1 (4.6-8.2)	7.6 (5.5-10.4)	1.1 (0.5-2.1)	0.8 (0.4-1.6)	0.9 (0.5-1.5)	13.8 (11.6-16.4)	22.1 (18.7-26.0)
Developmental disorders	31	19.3 (6.4-45.6)	19.6 (5.6-50.2)	7.6 (2.3-21.9)	11.8 (3.4-33.9)	3.9 (0.9-15.7)	42.0 (20.1-67.6)	50.6 (25.2-75.7)
Epilepsy	32	3.5 (0.9-12.9)	0.2 (0.0-1.3)	3.7 (0.7-16.5)	2.4 (0.5-10.7)	2.9 (0.4-18.2)	11.6 (3.9-29.9)	20.8 (9.2-40.4)
Headache[g]	1219	5.5 (4.0-7.5)	4.2 (2.3-7.5)	0.6 (0.3-1.4)	0.4 (0.2-0.9)	0.8 (0.5-1.4)	9.7 (7.2-13.0)	19.9 (15.6-25.0)
Learning disability	562	8.0 (4.8-12.9)	15.3 (10.5-21.8)	2.1 (0.8-5.3)	1.7 (0.7-4.1)	1.0 (0.3-2.9)	23.7 (18.3-30.1)	30.9 (25.6-36.8)

orders, respectively. Only 2.5% of adolescents without a 12-month *DSM-IV* disorder had been prescribed psychotropic medications. Of these, 78% had evidence of psychological distress or impairment reflected in a lifetime history of mental disorders, subthreshold conditions, or developmental disorders (data not shown). Not shown

Racial and Ethnic Disparities in ADHD Treatment

aORs of ADHD Medication Use by Race/Ethnicity Over 3 Waves Among Children With a Diagnosis or Symptoms of ADHD

Child Race/Ethnicity	Fifth Grade (n = 577)		Seventh Grade (n = 721)		10th Grade (n = 645)	
	% (N)	aOR (95% CI)	% (N)	aOR (95% CI)	% (N)	aOR (95% CI)
Total	47 (270)		36 (261)		45 (282)	
White	73 (125)	Ref	61 (118)	Ref	67 (143)	Ref
African-American	41 (101)	0.33 (0.17–0.62)[a]	33 (97)	0.34 (0.18–0.64)[a]	35 (88)	0.41 (0.22–0.75)[a]
Latino	24 (31)	0.38 (0.16–0.90)[a]	19 (35)	0.51 (0.23–1.15)	29 (36)	0.42 (0.20–0.86)[a]
Other	45 (13)	0.37 (0.12–1.10)	29 (11)	0.24 (0.11–0.56)[a]	44 (15)	0.33 (0.11–0.96)[a]

aORs of ADHD Medication Use According to Race/Ethnicity Over 3 Waves Among Children With No Diagnosis or Symptoms of ADHD at Wave 1

Child Race/Ethnicity	Fifth Grade (n = 3628)		Seventh Grade (n = 3628)		10th Grade (n = 3596)	
	% (N)	aOR (95% CI)	% (N)	aOR (95% CI)	% (N)	aOR (95% CI)
Total	1 (44)		2 (86)		4 (138)	
White	1 (7)	Ref	3 (25)	Ref	7 (56)	Ref
African-American	2 (22)	1.03 (0.27–3.96)	3 (33)	0.73 (0.30–1.74)	4 (39)	0.59 (0.28–1.22)
Latino	1 (13)	0.51 (0.12–2.23)	2 (23)	0.85 (0.31–2.34)	3 (38)	0.55 (0.24–1.29)
Other	1 (2)	1.23 (0.13–11.64)	2 (5)	1.08 (0.30–3.92)	4 (5)	0.70 (0.25–2.02)

Coker et al. Pediatrics 2016;138(3):e20160407

Cross-national comparisons of stimulant use

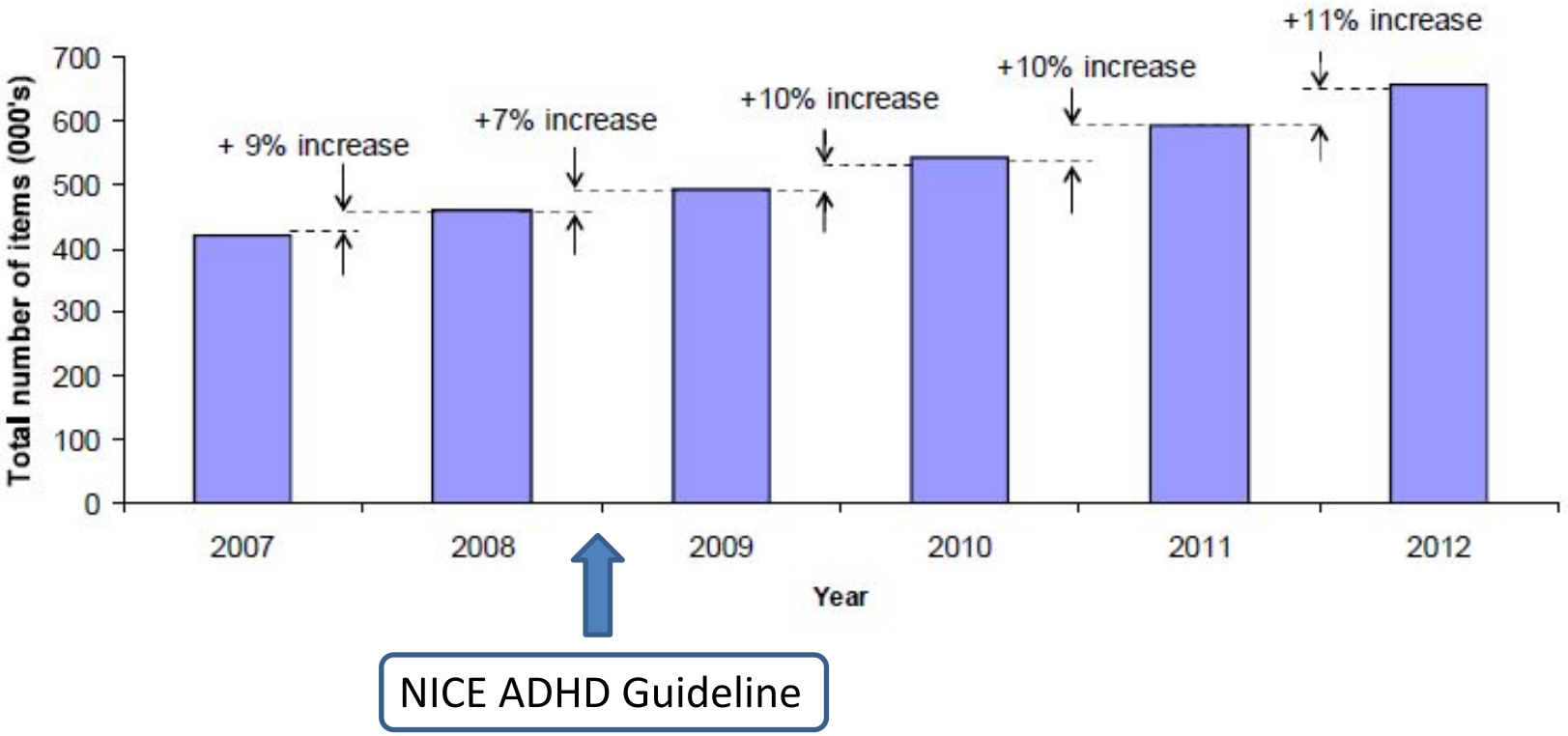
Table 5: Prevalence per 100 and 95% CIs for the use of stimulants during the year 2000

	US (n = 127,157)			Netherlands (n = 110,944)			Germany (n = 356,520)		
Age (yr)	Male	Female	Total*	Male	Female	Total*	Male	Female	Total*
0–4	0.76 0.67–0.86	0.20 0.15–0.25	0.49 0.48–0.49	0.08 0.04–0.14	0.02 0.00–0.05	0.05 0.04–0.06	0.02 0.01–0.04	0.01 0.00–0.03	0.02 0.01–0.02
5–9	10.72 10.19–11.26	3.68 3.36–4.03	7.29 7.28–7.29	2.86 2.58–3.16	0.63 0.50–0.78	1.77 1.76–1.78	1.74 1.62–1.87	0.40 0.34–0.46	1.09 1.08–1.09
10–14	11.43 10.80–12.07	3.16 2.82–3.53	7.40 7.39–7.41	3.57 3.26–3.9	0.59 0.46–0.73	2.12 2.11–2.12	2.37 2.24–2.50	0.48 0.42–0.55	1.45 1.45–1.45
15–19	2.75 2.39–3.16	0.59 0.44–0.76	1.70 1.69–1.71	1.17 1.01–1.35	0.22 0.15–0.31	0.71 0.70–0.71	0.42 0.36–0.48	0.06 0.04–0.09	0.25 0.24–0.25
Total*	6.52 6.52–6.53	1.94 1.94–1.95	4.29 4.29–4.29	1.95 1.95–1.96	0.37 0.37–0.37	1.18 1.18–1.18	1.16 1.16–1.16	0.24 0.24–0.24	0.71 0.71–0.71

*Totals were adjusted to the child and adolescent population of the US 2000 census by the direct standardization method.

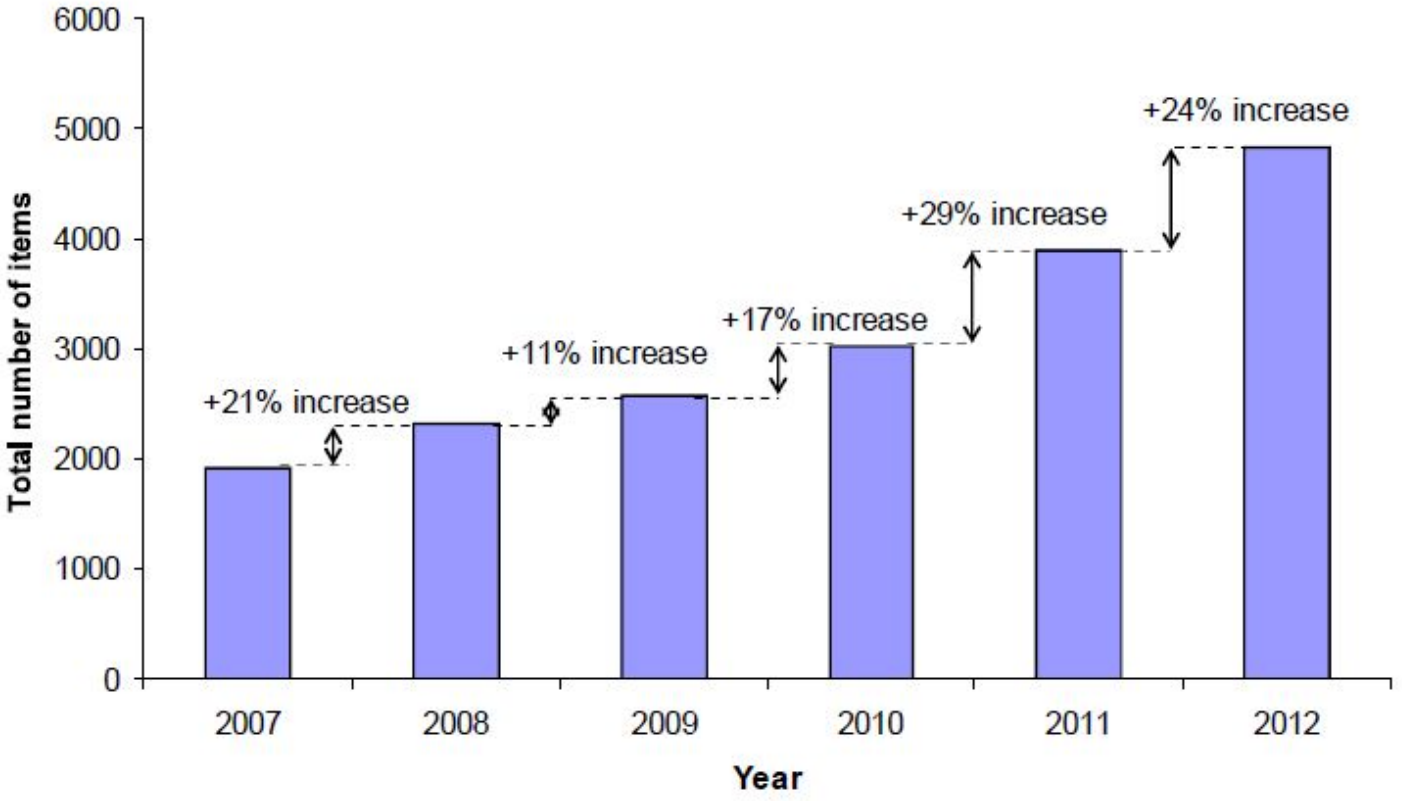
Zito et al. Child Adolesc Psychiatry Ment Health 2008;2:26

Total number of methyphenidate prescribed in NHS primary care (2007-11)



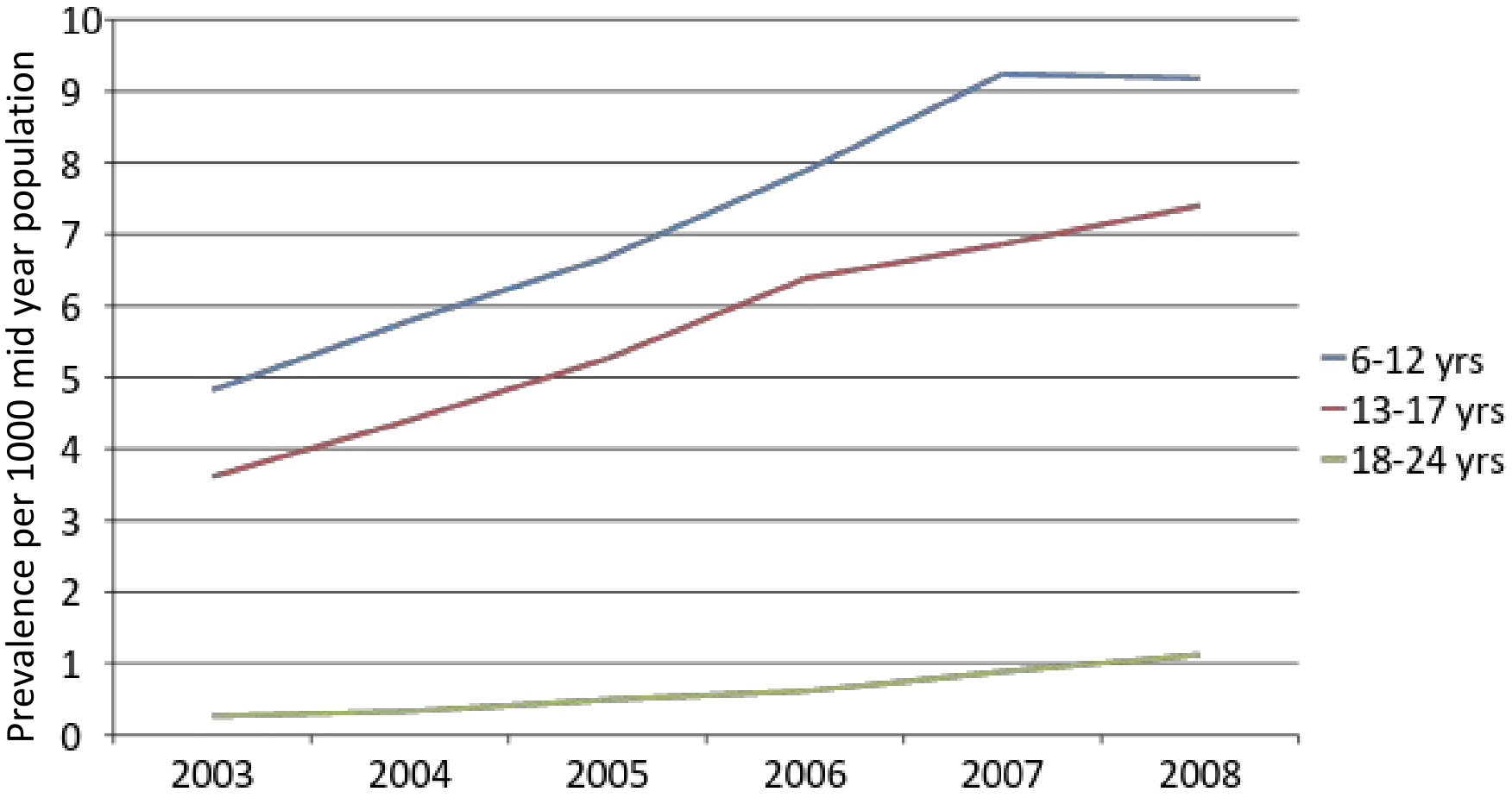
The safer management of controlled drugs: Care Quality Commission; Annual Report 2012

Total numbers of methylphenidate privately prescribed in England (2007-11)



The safer management of controlled drugs: Care Quality Commission; Annual Report 2012

ADHD prescribing prevalence by age group and year in UK primary care



McCarthy et al. BMC Pediatr 2012;12:78.

Incidence of medication initiation for ADHD in UK primary care

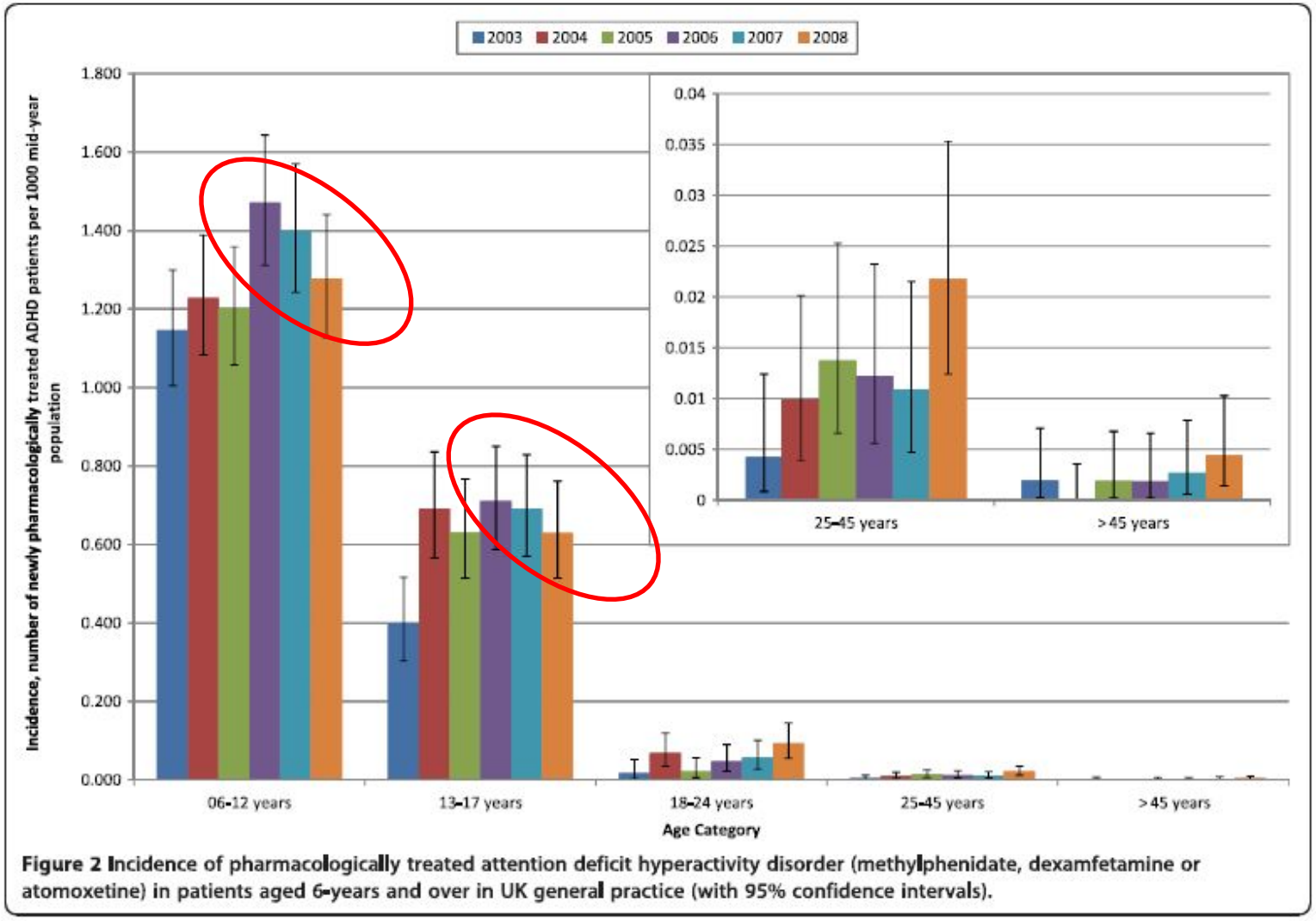
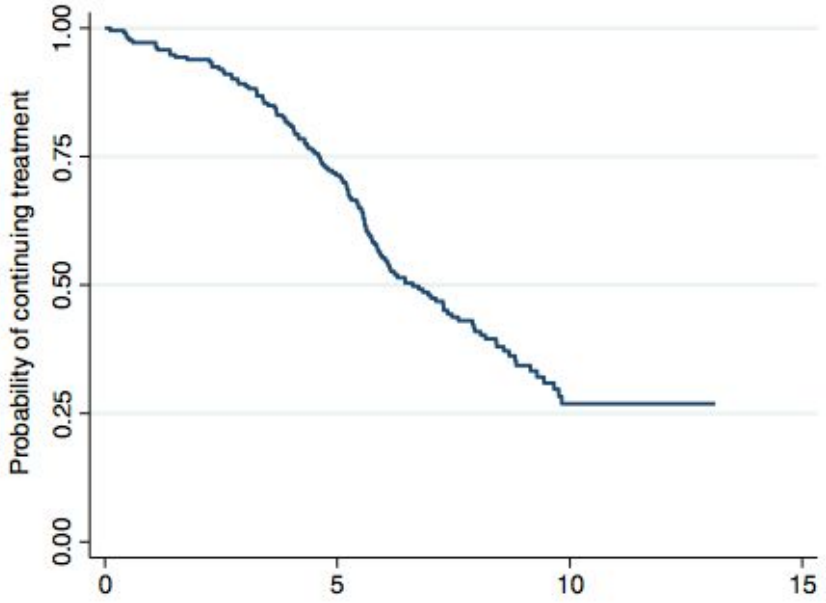


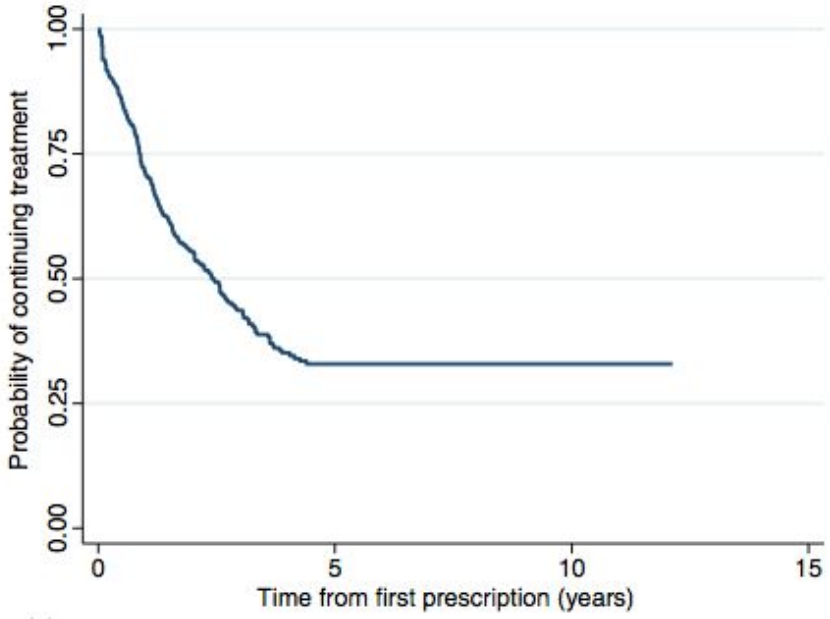
Figure 2 Incidence of pharmacologically treated attention deficit hyperactivity disorder (methylphenidate, dexamfetamine or atomoxetine) in patients aged 6-years and over in UK general practice (with 95% confidence intervals).

McCarthy et al. BMC Pediatr. 2012;12:78.

Persistence of pharmacological treatment into adulthood, in UK primary care, for ADHD patients who started treatment in childhood or adolescence



Treatment started between 6–12 years



Treatment started between 13–17 years

McCarthy et al. BMC Psychiatry 2012, 12:219

ADHD treatment rates in Brazil

- High Risk Cohort Study: 2500 children from 57 schools in SP and PoA: 7.7%
- 4 comnunity studies in Brazil, Venezuela and Puerto Rico: 0, 3%, 4%, 7%

Age range	Brazilian Population*	ADHD prevalence estimate	Estimated number of individuals with ADHD in Brazil	Estimated number of patients with ADHD under treatment in 2009**	Estimated number of patients with ADHD under treatment in 2010**
5 to 19 years old	49.127.006	0.9%	442.143		
20 to 59 years old	107.242.035	0.45%	482.589		
60 years old and more	20.590.599	Unknown	-		
TOTAL			**924.732**	**149.937**	**184.481**

Polanczyk et al. JAACAP 2008; 47:721-2.
Mattos, Rohde, Polanczyk. Rev Bras Psiquiatr 2012;34(4):513-6

FOLHA DE S.PAULO

Governo quer protocolo para conter uso de Ritalina por crianças

NATÁLIA CANCIAN
DE BRASÍLIA

21/10/2015 02h00 - Atualizado às 11h32

Em São Paulo, a adoção do protocolo no ano passado reduziu o consumo do remédio na rede pública: de 54 mil comprimidos distribuídos em setembro de 2014 para 25 mil no mesmo mês deste ano. Já o número de usuários foi de 550 para 324.

"O protocolo mostrou que, quando há a orientação clara do uso, do diagnóstico e do acompanhamento, há redução do uso abusivo", afirma o secretário municipal de saúde, Alexandre Padilha. "Antes, havia casos de inclusão [no tratamento] porque a criança mexia mais de quatro vezes na cama."

Projeção de População Residente em 1º de julho

São Paulo - 2015

IMPRIMIR

Faixa Etária - Escolar	Total
00 a 03 anos	672.684
04 a 05 anos	287.892
06 anos	138.643
07 a 10 anos	553.939
11 a 14 anos	603.659
15 a 17 anos	517.140
18 a 19 anos	352.716
Total da Seleção	**3.126.673**
Total Geral da População	**11.581.798**

Fonte: Fundação Seade.

Total population 7-19 y: 2.027.454
ADHD 5%= 101.373
ADHD 1%= 20.275

OPINION

Raising the Ritalin Generation

By BRONWEN HRUSKA
Published: August 18, 2012

I REMEMBER the moment my son's teacher told us, "Just a little medication could really turn things around for Will." We stared at her as if she were speaking Greek.

Enlarge This Image

Joren Cull

"Are you talking about Ritalin?" my husband asked.

Will was in third grade, and his school wanted him to settle down in order to focus on math worksheets and geography lessons and social studies. The children were expected to line up quietly and "transition" between classes without goofing around. This posed a challenge — hence the medication.

Conclusions

- ADHD as defined by DSM is heuristics that have proven extremely useful in clinical practice and research.
- Although it has been showed that ADHD diagnosis has validity, to further advance the field research will be focusing on neurobiological and genetic hypotheses, which will be followed by bottom-up reanalysis.
- It is unknown how (and if) the new knowledge will be translated to clinical care.
- In this respect, a growing number of children in need of treatment are receiving it, with substantial challenges ahead.
- Globally, a huge challenge relates to the mental health of children from LMICs, where few if any services are available.


INSTITUTO DE PSIQUIATRIA

Attention-deficit/hyperactivity disorder:

Diagnosis, prevalence and access to services

Guilherme V. Polanczyk, MD, PhD

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University of São Paulo Medical School, Brazil

gvp@usp.br

The ADHD Tsunami? Global perspectives - *UCD Child & Adolescent Psychiatry*
Dublin, Ireland – Oct 14th, 2016