

# Look who's talking: Using birth cohorts to extend the evidence base in speech & language therapy



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[www.borntalking.org.uk](http://www.borntalking.org.uk)

# Aims of this workshop

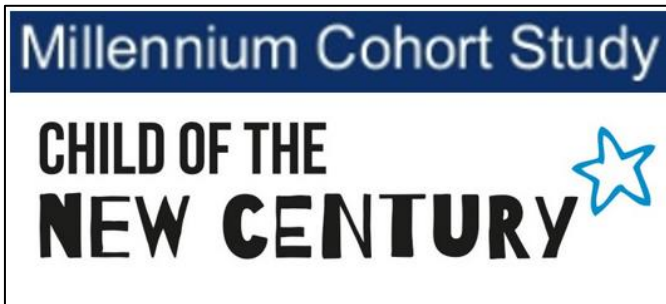
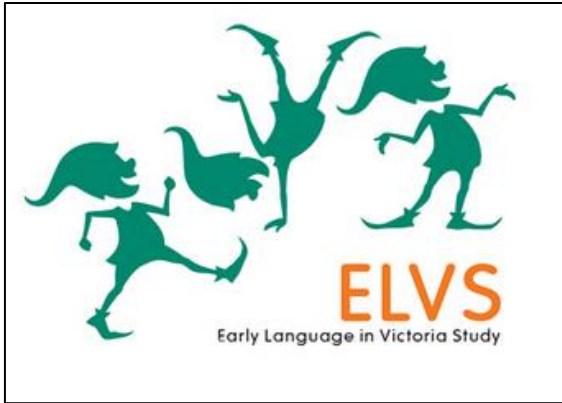
- Introduce the concept of birth cohorts
- Identify some relevant cohorts
- Consider why we should use birth cohorts for SLCN research
- Outline how to access data
- Give some examples from our own work around SLCN
- Discuss potential for using birth cohorts to
  - address clinically relevant questions
  - influence policy and practice

# What is a birth cohort?

## A type of longitudinal study

- Data collection starts around time of birth
- Regularly throughout life
- Typically a large sample
- Typically a very large number of variables
- Many are community samples – representative
- Because of these features, findings often inform policy and practice in non-SLCN areas

# Examples of birth cohorts



# Why is this important for research into SLCN?

Speech & language research is often...

- Based on small samples
- Based on clinical samples

Can such findings be generalized to all of the population with the SLCN condition, even if they don't attend clinic?

# Representativeness of clinical samples?

## Predictors of seeking clinical help

- Parental concern rather than need
- Higher SES
- English-speaking
- Child characteristics, e.g.
  - Boys
  - Twins



## Who gets help for pre-school communication problems? Data from a prospective community study

J. Skeat,<sup>\*†</sup> M. Wake,<sup>\*†‡</sup> O. C. Ukoumunne,<sup>§</sup> P. Eadie,<sup>\*\*\*</sup> L. Bretherton<sup>‡¶</sup> and S. Reilly<sup>\*†‡</sup>

# We should use birth cohorts for SLCN research because...

- They are large samples
- They are representative – not just those attending clinic
- They collect a wide range of data
  - Rich data set – many possible research questions can be answered
  - Control for confounding variables, e.g. sex, parental education, socio-economic variables, some forms of co-morbidity
- They are often used to inform policy and practice
- Sometimes they are available for secondary data analysis

# What questions can birth cohorts answer?

- What is the risk of a child with performance x having a good or a poor outcome?
- How much does social risk have a bearing on those outcomes – or is it just the child's earlier performance that matters?
- What is the psychosocial impact of stuttering?
- Do speech patterns affect children's performance at GCSE?
- People worry about dummies – do they have any effect at all on children's outcomes?



# What questions can birth cohorts answer?

- How much do the services children receive affect their outcomes?
- Do children with a diagnosis of x have a different outcome from those that do not have the diagnosis?
- Does treatment x work better than treatment y?

# Accessing the data for secondary analysis

- Visit websites of the individual studies
- Look at resources at the Centre for Longitudinal Studies at [www.cls.ioe.ac.uk](http://www.cls.ioe.ac.uk)
- Available data is usually held by the UK Data Service [www.ukdataservice.ac.uk](http://www.ukdataservice.ac.uk)
- Contact one of us if you are interested in collaborating

Questions/comments so far?

# Psychosocial impact of stuttering

Jan McAllister

[j.mcallister@uea.ac.uk](mailto:j.mcallister@uea.ac.uk)

# Social anxiety disorder among adults who stutter

- “A persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others...[and of acting] in a way that will be embarrassing and humiliating” (DSM5)
- Avoidance of feared situation
- High prevalence of social anxiety disorder among adults who stutter
- Clinically important to identify when these problems start

# Onset of social anxiety disorder

- Typical onset 8-15 years
- May be gradual, or sudden – triggered by a specific event
- Some risk factors – associated but may not be causal
  - Fearful temperament
  - Abuse e.g. bullying
  - Poor self-esteem
- Are children who stutter more likely to exhibit these risk factors?

# Millennium Cohort Study (MCS)

- ~19,000 children born 2000-2001
- Data collection at 9 months and 3, 5, 7, 11, 14 years
- Tens of thousands of variables
  - Physical, cognitive, social development...
  - Socioeconomic circumstances, health, education...
  - Cohort members themselves, parents, teachers, siblings

# MCS stuttering data

- To date parental report only
- Ages 3, 5, 11, 14
  - Age 3 N=173 (1.3%)
  - Age 5 N=194 (1.4%)
  - Age 11 N=170 (1.4%)
  - Age 14 N=157 (1.2%)

Einarsdottir & Ingham (2009). *International Journal of Language & Communication Disorders*, 44, 847-863.

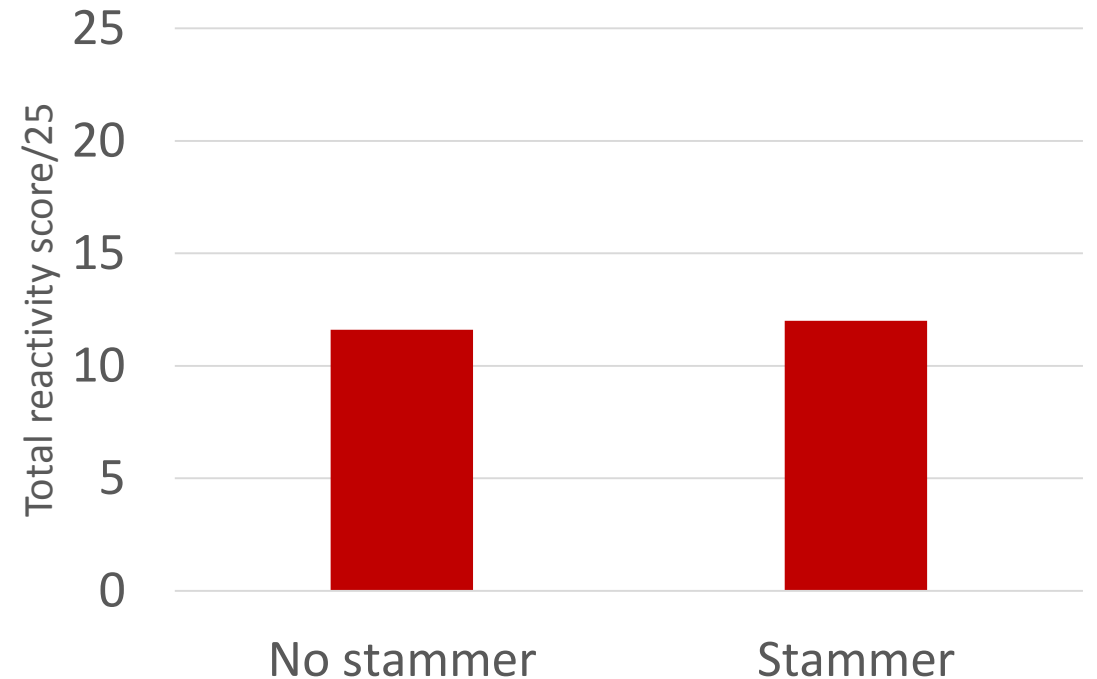
Reilly, Onslow, Packman, Wake, et al. (2009). *Pediatrics*, 123, 270-272

Yairi, & Ambrose, (2005). *Early Childhood Stuttering*.



# MCS: Carey Infant Temperament Scale

- Age 9 months
- Stutter at 14
- Reaction to new people and situations (higher scores = fear, withdrawal)



# MCS: Strengths & Difficulties Questionnaire (SDQ)

- Behavioural ,emotional and social development
- 3-16 year olds
- In MCS, parent-completed when child was 3, 5, 7, 11, 14
- 25 items in 5 scales



# MCS: Strengths & Difficulties Questionnaire (SDQ)



Prosocial

# MCS: Strengths & Difficulties Questionnaire (SDQ)



Emotional



Peer



Conduct



Hyperactivity

# MCS: Strengths & Difficulties Questionnaire (SDQ)



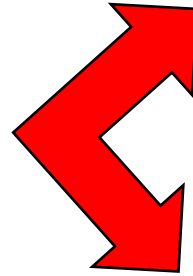
Emotional



Peer

# Strengths & Difficulties Questionnaire

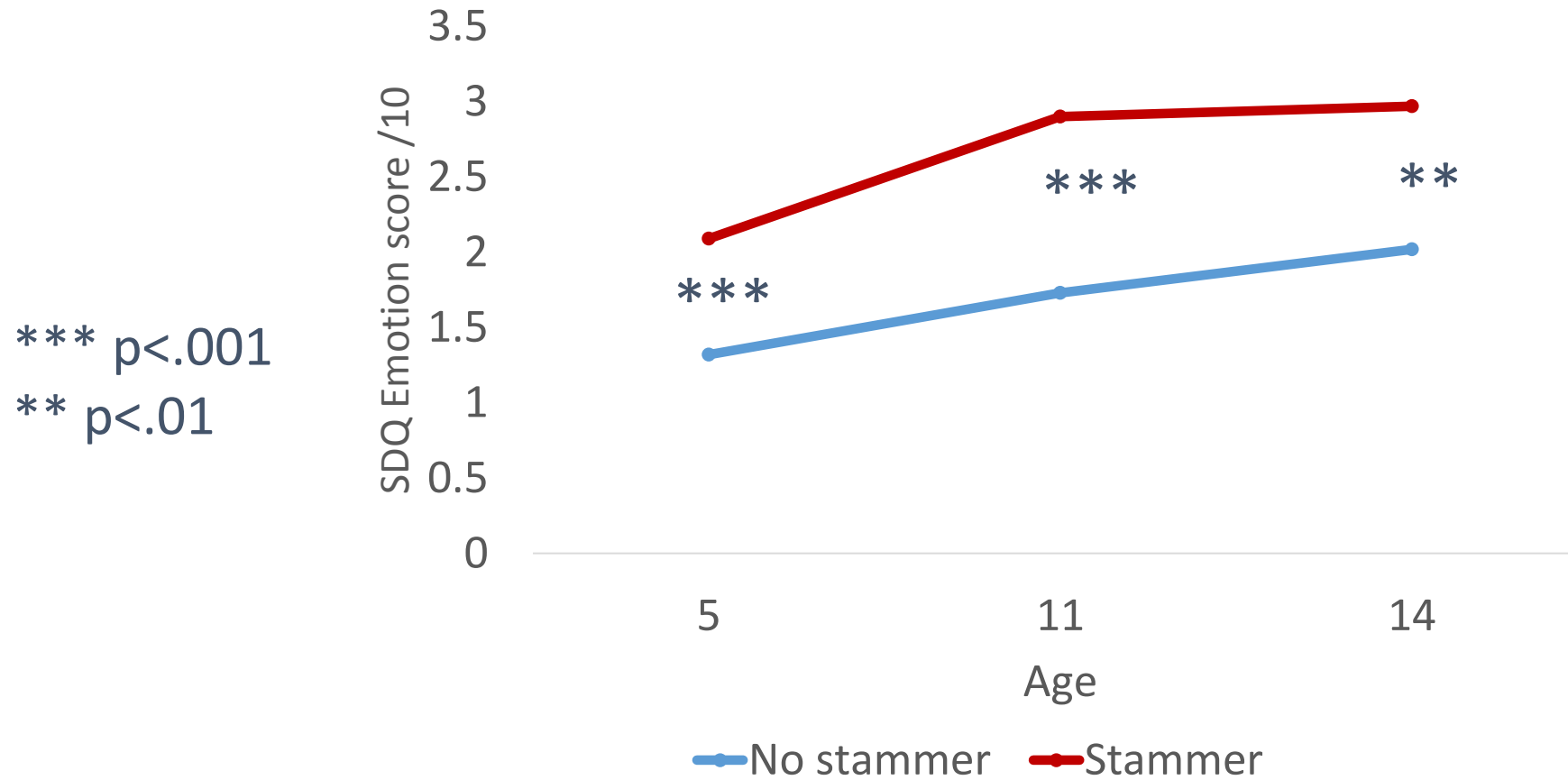
Prosocial  
Emotional  
Conduct  
Hyperactivity  
Peer  
Total Difficulties



Raw score

% of 'extreme' scores

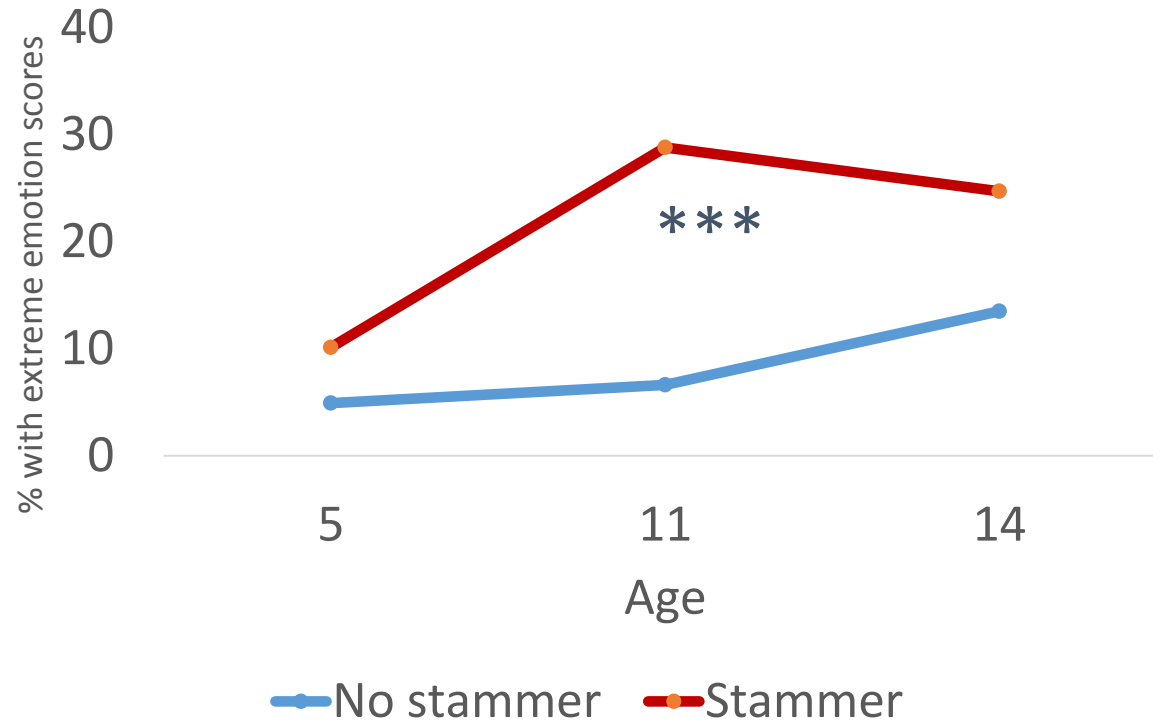
# SDQ Emotional Scale



# SDQ Emotional scores – cause for clinical concern

- Percent at or beyond cut-off

\*\*\*  $p < .001$





# Bullying and stammering

Prior research suggests that

- Stuttering is associated with negative peer responses from an early age
- This continues into adolescence and beyond

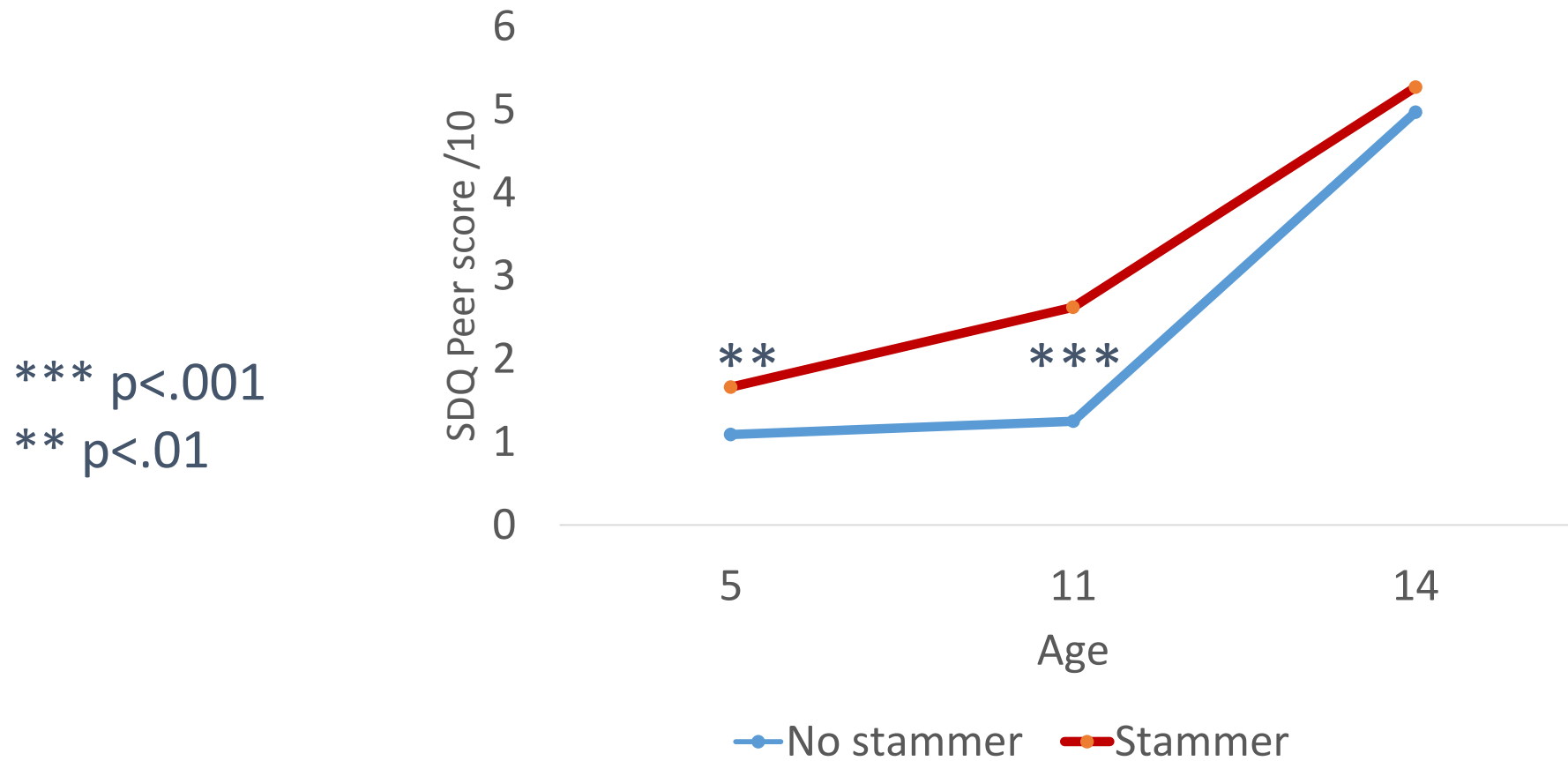
Blood & Blood (2016). *Journal of Fluency Disorders*, 50, 72-84.

Blood, Blood, Tramontana, Sylvia, Boyle & Motzko, G. R. (2011). *Perceptual & Motor Skills*, 113, 353-364.

Davis, Howell & Cook, F. (2002). *Journal of Child Psychology and Psychiatry*, 43, 939-947.

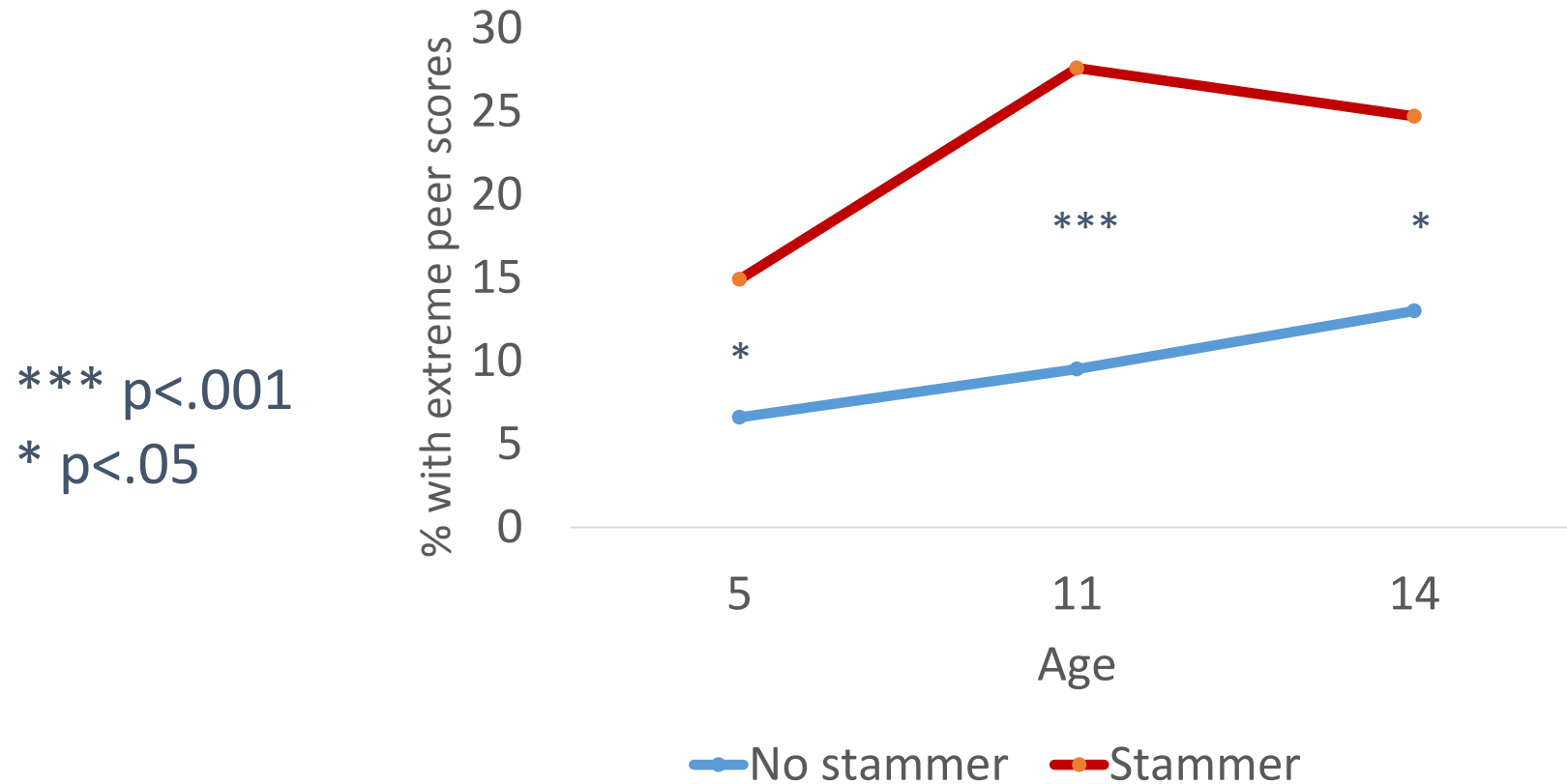
Langevin, Packman & Onslow, M. (2009). *American Journal of Speech-Language Pathology*, 18, 264–278.

# SDQ Peer Scale



McAllister, J. (2016). *Journal of Fluency Disorders*, 50, 23-32.

# SDQ Peer scores – cause for clinical concern

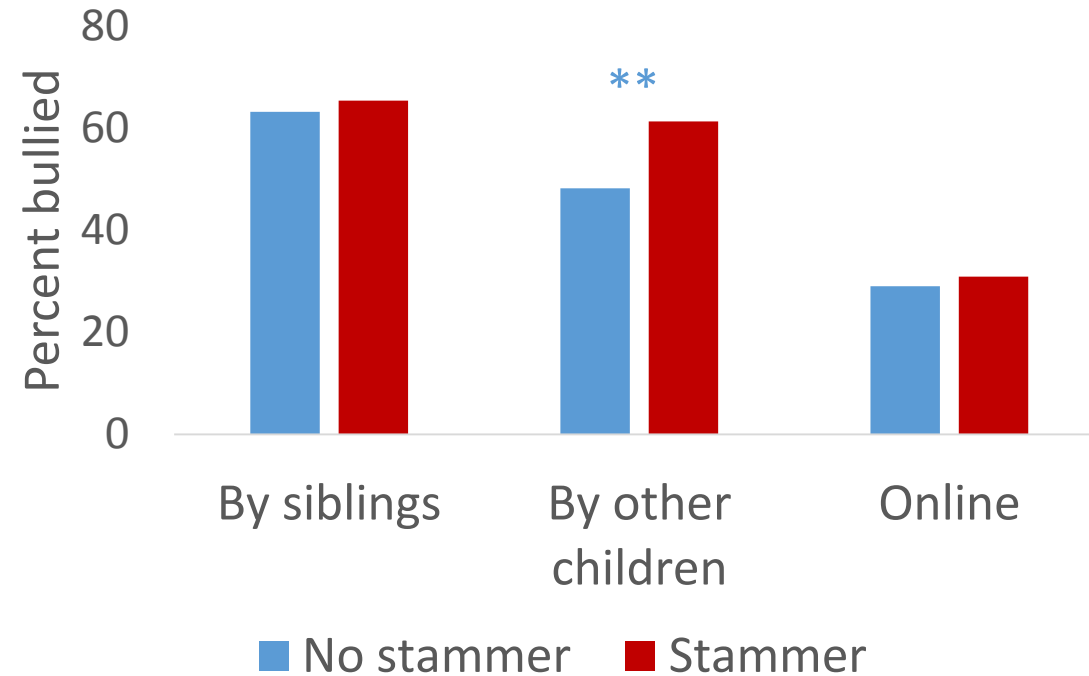


# MCS age 14 – self-report about being bullied

- How often do your brothers or sisters hurt you or pick on you on purpose?
- How often do other children hurt you or pick on you on purpose?
- How often have other children sent you unwanted or nasty emails, texts or messages or posted something nasty about you on a website?

# MCS age 14 – self-report about being bullied

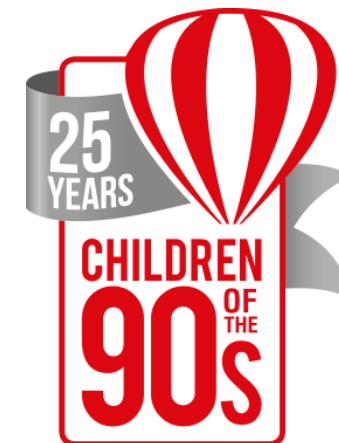
\*\*  $p < .01$



# Conclusions: Psychosocial impact of stuttering

- MCS provides evidence that at ages 5, 11 and 14, children who stutter are more likely as a group than fluent peers to exhibit precursors of social anxiety disorder
- No different in pre-stuttering temperament but ...
  - Poorer scores on emotional scale at all three ages
  - More likely to have scores that are cause for clinical concern at age 11
  - More likely to be bullied at all three ages
- These results hold even after controlling for confounds
- They can be generalised to the wider population of children who stutter

# Current and recent research using ALSPAC speech and language data



*Yvonne Wren, Director of Research, BSLTRU; Senior Research Fellow,  
University of Bristol*

*Sue Roulstone, Emeritus Professor, University of the West of England*

*Rosemarie Hayhow, Honorary Research Fellow, BSLTRU*

11<sup>th</sup> July 2016

# ALSPAC



## COHORT PROFILE

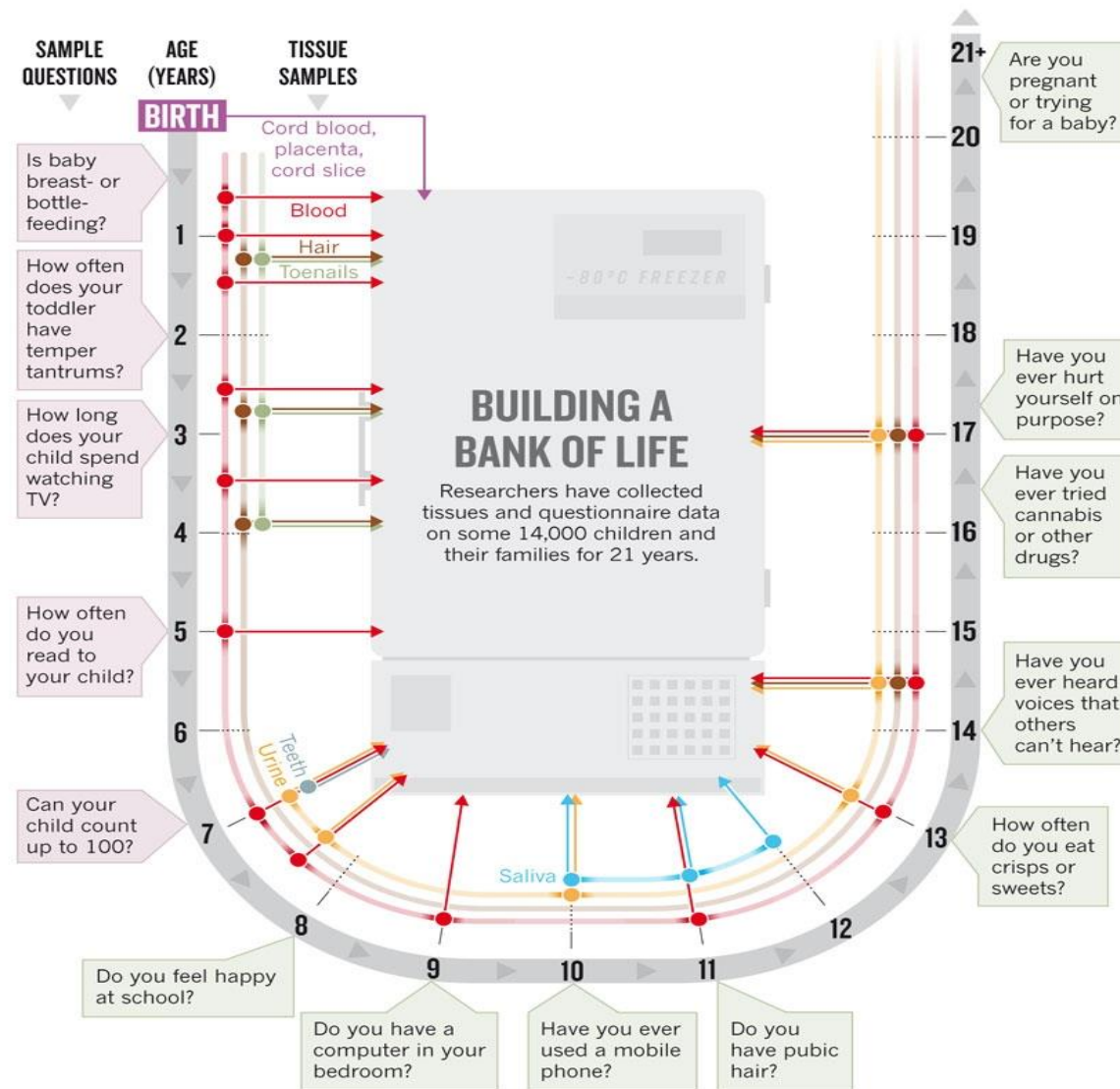
### Cohort Profile: The 'Children of the 90s'—the index offspring of the Avon Longitudinal Study of Parents and Children

Andy Boyd,<sup>1\*</sup> Jean Golding,<sup>2</sup> John Macleod,<sup>1</sup> Debbie A Lawlor,<sup>3</sup> Abigail Fraser,<sup>3</sup> John Henderson,<sup>1</sup> Lynn Molloy,<sup>1</sup> Andy Ness,<sup>4</sup> Susan Ring<sup>1</sup> and George Davey Smith<sup>3</sup>

International Journal of Epidemiology 2012

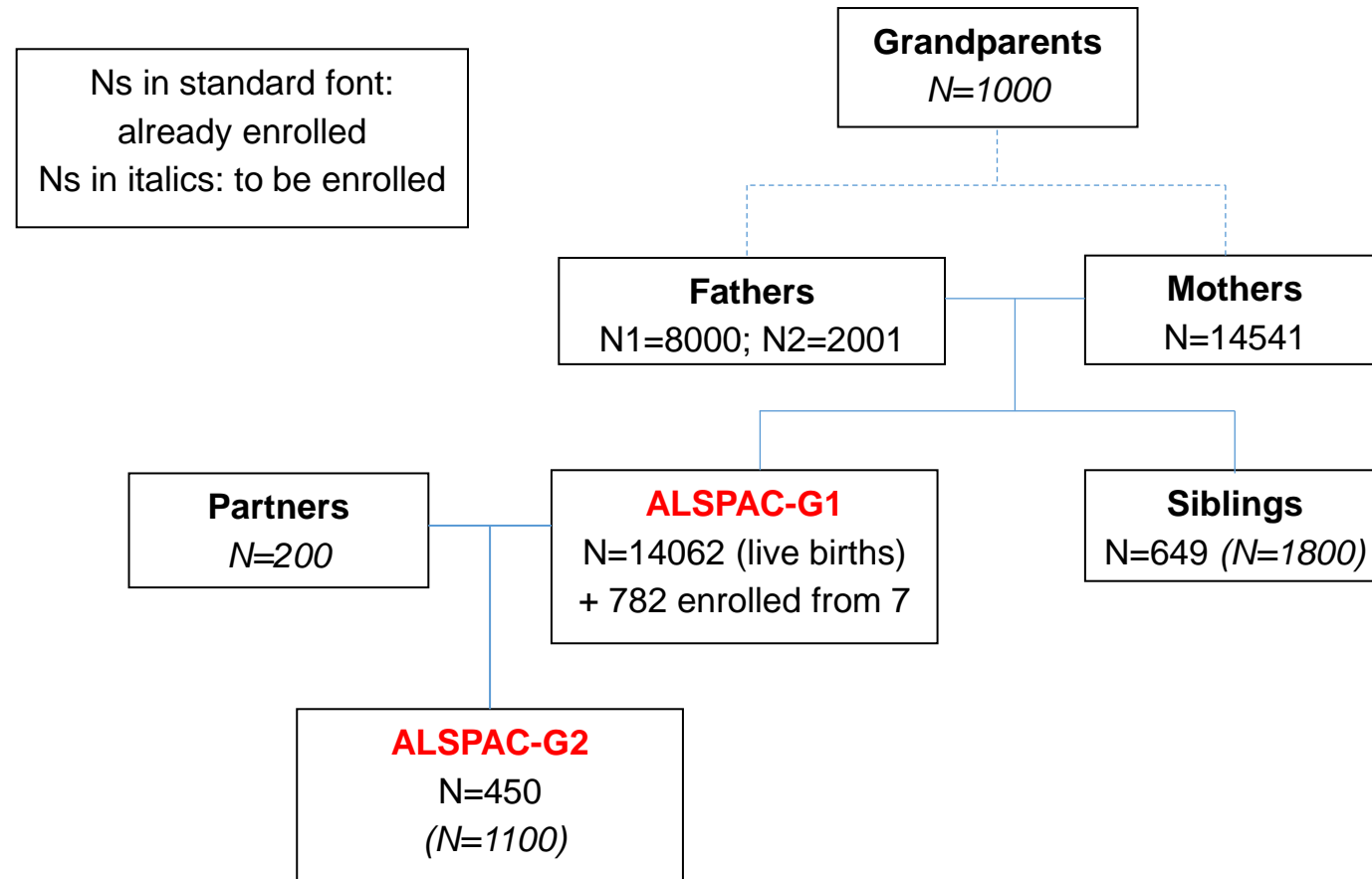
- Avon Longitudinal Study of Parents and Children
- Bristol based birth cohort study
- 1991 – 1992 14,500 pregnant women
- Last 24 years 10,000 original children, mothers and fathers
- Extended recruitment to children of children, grandparents and siblings





"Building a bank of life" overview diagram of data collection. Taken from Pearson, Helen (10 April 2012). "Children of the 90s: Coming of age". *Nature* 484 (7393): 155–158. doi:[10.1038/484155a](https://doi.org/10.1038/484155a) Copyright 2012 Nature Publishing Group: reproduced by permission.

# ALSPAC: a multi-generational resource for the study of health and disease



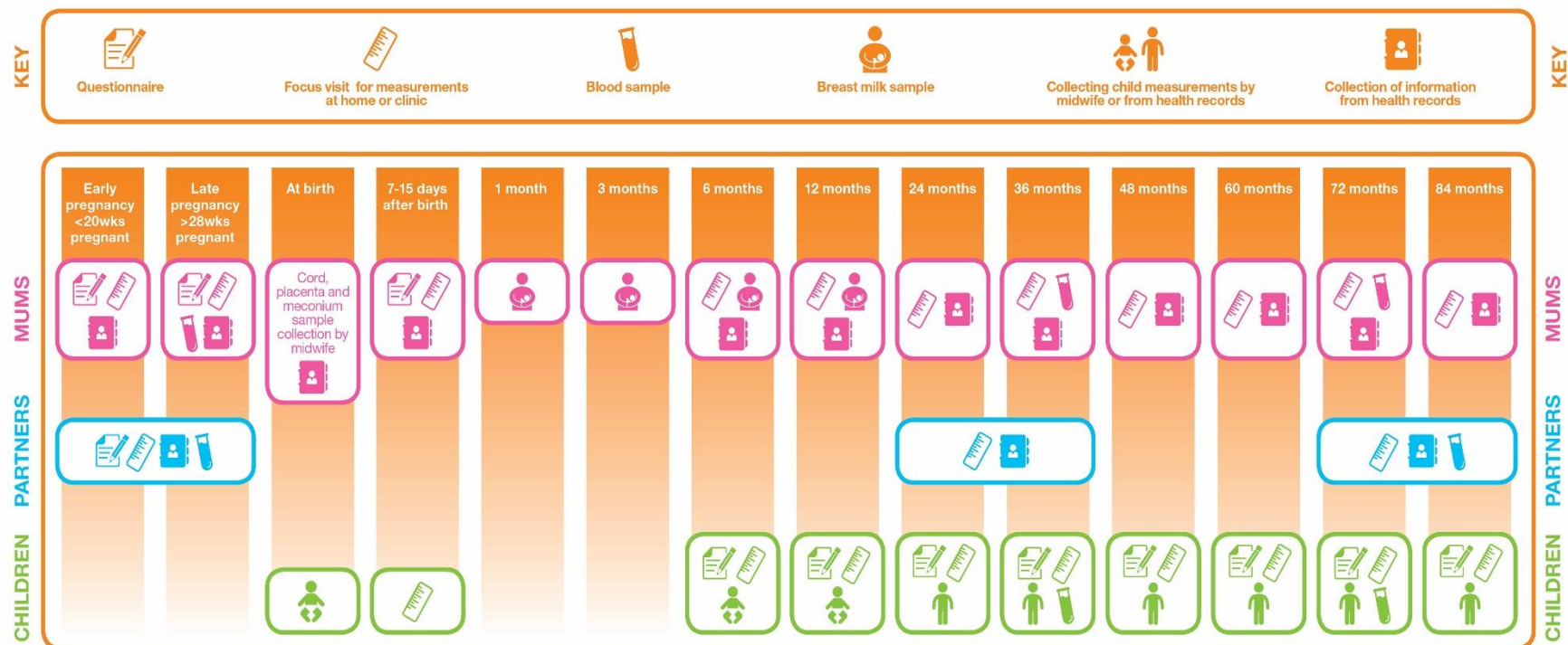
# Data Collection

- Questionnaires
- Clinics/direct assessments
- Linkage
- Biological samples



# ALSPAC-G2

## Visit schedule



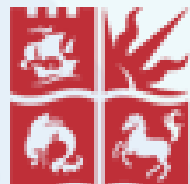


# **The Effect of Different Feeding Methods and Non-nutritive Sucking Behaviours on Child Speech Development**

Samantha Burr

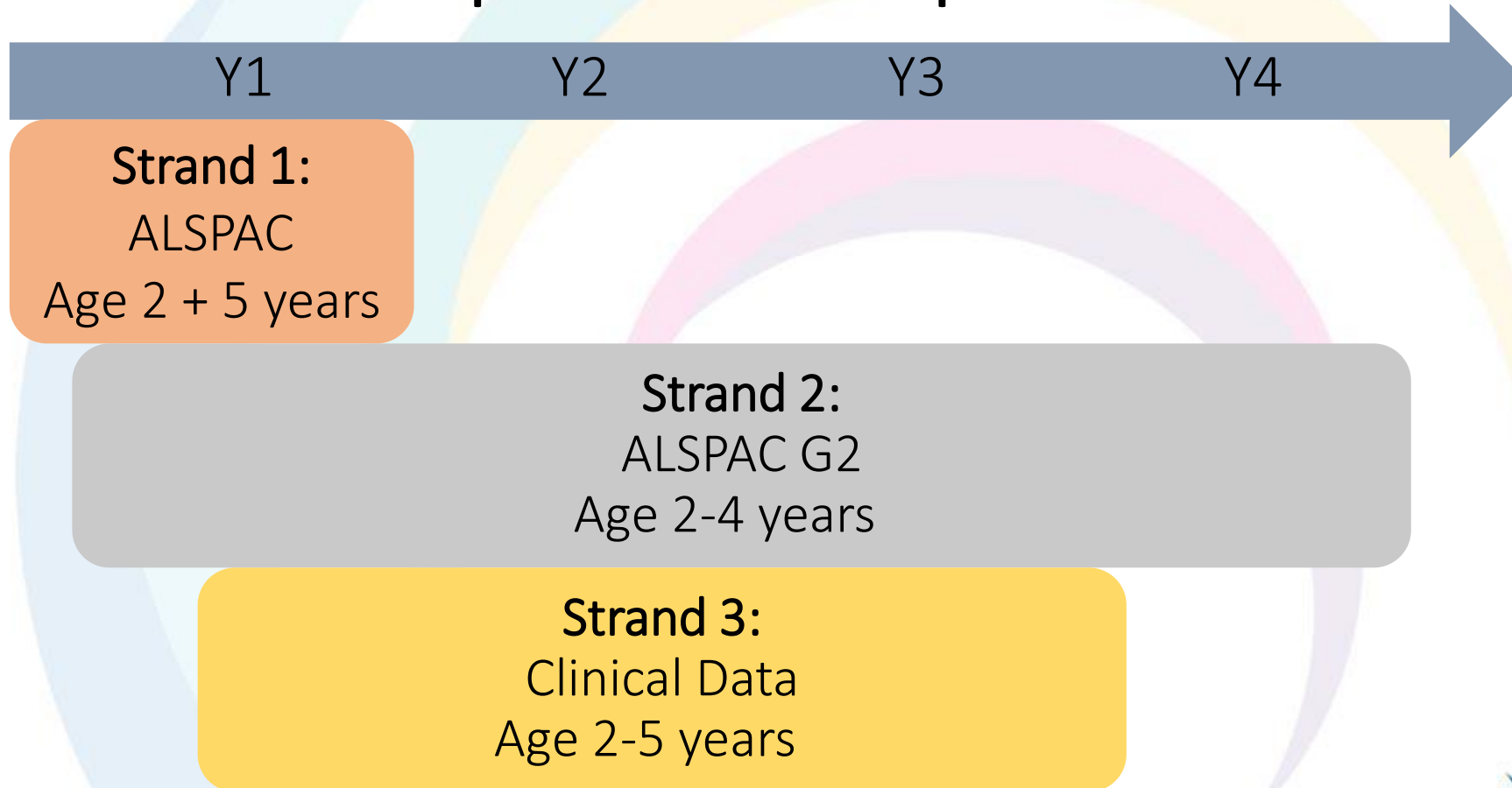
Paediatric Speech & Language Therapist

NIHR Clinical Doctoral Research Fellowship 2016



University of  
**BRISTOL**

## Breast/bottle feeding (NS), dummy/finger sucking (NNS) and speech sound development





# Access to the resource - metadata

The screenshot shows a web browser window displaying the 'Avon Longitudinal Study of Parents and Children' (ALSPAC) Researchers page. The browser's address bar shows the URL [www.bristol.ac.uk/alspac/researchers/](http://www.bristol.ac.uk/alspac/researchers/). The page features a dark red header with the University of Bristol logo and the study name. A navigation menu includes links for Home, Study at Bristol, About, Schools & faculties, Research, Business & enterprise, News, and People & contacts. A search bar is also present. The main content area is titled 'Researchers' and includes a sidebar with links to Participants, Researchers (with sub-links for Cohort profile, Access the resource, Publications, Current research, Research ethics, and Latest newsletter), Media, A to Z index, News, About, and Contacts. The main text area contains a 'Newsletter' image, a section titled 'Access the resource' with a link to the 'online proposals system', and a video titled 'An introduction to ALSPAC'. Below this, there is a section 'Our data' with links to 'Questionnaires' and 'Clinical measures'. A '25 YEARS CHILDREN OF THE 90s' logo is visible on the left. The bottom of the page shows a Twitter feed and a system clock indicating 15:23 on 08/07/2016.

University of BRISTOL

Avon Longitudinal Study of Parents and Children

Current students / Current staff / Alumni

Google Custom Search search

> Avon Longitudinal Study of Parents and Children > Researchers

## Researchers

Participants

**Researchers**

- Cohort profile
- Access the resource
- Publications
- Current research
- Research ethics
- Latest newsletter

Media

- A to Z index
- News
- About
- Contacts

25 YEARS CHILDREN OF THE 90s

We have a rich resource of phenotypic, environmental, genetic and linkage data gathered from different cohort groups over almost 25 years. Our [data dictionary](#) (zip file, 213MB) provides an overview of all the data we hold. Our [variable catalogue](#) (zip file 2MB) shows every single variable name and label, grouped according to data source. You will need this if you are a researcher planning to make a formal request to [access our data](#). You can also find out about our future data collection plans in the [ALSPAC New Data Collection Plan 2015-2019](#) (PDF, 188kB).

**Our data**

- Questionnaires
- Clinical measures

**Access the resource**

Visit our [online proposals system](#)

**An introduction to ALSPAC**

A film by the Wellcome Trust

Tweets by @CO90s

Children of the 90s @CO90s

15:23 08/07/2016

[www.Bristol.ac.uk/alspac/researchers](http://www.Bristol.ac.uk/alspac/researchers)

# Speech and Language data within ALSPAC

- **Speech data** (recordings, phonetically transcribed samples, scores from analysis of transcribed samples, scores from formal assessment, parent report)
- **Stammering data** (recordings, scores from recordings, parent report)
- **Language data** (recordings, orthographic transcriptions, scores from formal assessment, parent report)
- **Communication data** (recordings, orthographic transcription, parent report)



# Questionnaires to parents

Age of child	0/1	2	3	4	5	6	7	8	9	10	11
Vocabulary (MacArthur CDI)	X	X	X								
Two word utterances		X	X								
Longest utterances		X	X								
Grammar/ Morphology		X	X								
Intelligibility			X	X	X	X					
Enjoyment of talking			X	X	X	X					
Problem with talking/worried			X		X	X		X			

# Questionnaires to parents

[illegible]

# Children in Focus clinics

Age of child	CiF12m	CiF 25m	CiF 61m
<i>Sample size</i>		<i>1127</i>	<i>994</i>
Parent interaction measure (Thorpe)	X		
Parent report (BRISCC)		X	
Language comprehension (Reynell)		X	X
Object naming assessment		X	
Picture naming assessment*			X
Expressive language (Renfrew Bus Story)*			X
Initial consonants detection test			X
Non-word repetition (CNRep)*			X
Multisyllabic word repetition*			X

\*Recorded

# Focus clinics – speech and language data

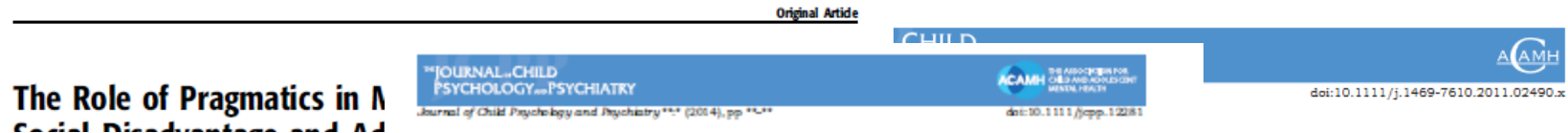
Age of child	F@8
<i>Sample size</i>	7390
Comprehension (WOLD)	X
Expression (WOLD) – single words*	X
Expression (WOLD) – language sample*	X
Non-word repetition (reduced CNRep)*	X
Articulatory skills (DDK and prolonged ‘ah’)*	X
Tester observations	X
Parent report (stammer, voice, other)	X

\*Recorded

# Focus clinics – other highly relevant data

Age of child	F@7	F@8	F@9	F@10
<i>Sample size</i>	8297	7488	7725	7563
Hearing	X		X	X (tymp only)
Reading	X		X	
Spelling	X		X	
Phoneme deletion	X			
Letter decision task	X			
Coordination (Movement Assessment Battery)	X			
Attention		X		
Locus of Control		X		
Non-verbal accuracy (DANVA)		X		
Intelligence (WISC)		X		
Working memory				X

# Summary of SLC research in ALSPAC



## The Prevalence of Childhood Dysphonia: A Cross-Sectional Study

\*Paul N. Carding, †Sue Roulstone, ‡Kate Northstone, and §the ALSPAC Study Team

\*Newcastle and †‡§Bristol, United Kingdom

**Summary:** There is only very limited information on the prevalence of voice disorders, particularly for the pediatric population. This study examined the prevalence of dysphonia in a large cohort of children ( $n = 7389$ ) at 8 years of age. Data were collected within a large prospective epidemiological study and included a formal assessment by one of five research speech and language therapists as well as a parental report of their child's voice. Common risk factors that were also analyzed included sex, sibling numbers, asthma, regular conductive hearing loss, and frequent upper respiratory infection. The research clinicians identified a dysphonia prevalence of 6% compared with a parental report of 11%. Both measures suggested a significant risk of dysphonia for children with older siblings. Other measures were not in agreement between clinician and parental reports. The clinician judgments also suggested significant risk factors for sex (male) but not for any common respiratory or otolaryngological conditions that were analyzed. Parental report suggested significant risk factors with respect to asthma and tonsillitis. These results are discussed in detail.

**Key Words:** Childhood dysphonia—Dysphonia—Prevalence.

**Keywords:**  
Pragmatic language  
Expressive speech and language  
Adolescent psychiatric experiences  
Adolescent depression  
ALSPAC

In 7659 participants from the Avon Longitudinal Study of Parents and Children, Association using multivariate modelling.  
**Results:** Poorer pragmatic language at 9 years was associated with psychotic experiences at OR 1.22, 95% CI 1.11, 1.34; 18 years OR 1.25, 95% CI 1.10, 1.41) but only with depression at 9 years (OR 1.00, 1.22). Poorer expressive speech and language ability was not associated with psychotic experiences or depression at either age. There was evidence that pragmatic language was specifically associated with psychotic experiences at age 12 but no evidence that the strength of any of the associations changed over time.  
**Conclusions:** Deficits in pragmatic language precede early and late adolescent psychotic experiences and early adolescent depression. Interventions aimed at helping children improve pragmatic language skills may reduce the incidence of adolescent psychopathology and associated psychological disorder and dysfunction later in life.  
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Original Article

THE JOURNAL OF CHILD  
PSYCHOLOGY AND PSYCHIATRY

Journal of Child Psychology and Psychiatry \*\*\* (2016) 4, pp 1–11

CHILD

ACAMH  
THE ASSOCIATION FOR  
CHILD AND ADOLESCENT  
MENTAL HEALTH

doi:10.1111/jcpp.12261

ALAMH

doi:10.1111/j.1469-7610.2011.02490.x

in a High-Risk Autism Locus on 5p14  
is in the

JSLHR

Research Article

## Prevalence and Predictors of Persistent Speech Sound Disorder at Eight Years Old: Findings From a Population Cohort Study

Yvonne Wren,<sup>a,b</sup> Laura L. Miller,<sup>c</sup> Tim J. Peters,<sup>d</sup> Alan Emond,<sup>e</sup> and Sue Roulstone<sup>f</sup>

**Purpose:** The purpose of this study was to determine prevalence and predictors of persistent speech sound disorder (SSD) in children aged 8 years after disregarding children presenting solely with common clinical distortions (i.e., residual errors).

**Method:** Data from the Avon Longitudinal Study of Parents and Children (Boyd et al., 2012) were used. Children were classified as having persistent SSD on the basis of percentage of consonants correct measures from connected speech samples. Multivariable logistic regression analyses were performed to identify predictors.

**Results:** The estimated prevalence of persistent SSD was 3.6%. Children with persistent SSD were more likely to be boys and from families who were not homeowners. Early

childhood predictors identified as important were weak sucking at 4 weeks, not often combining words at 24 months, limited use of word morphology at 38 months, and being unintelligible to strangers at age 38 months. School-age predictors identified as important were maternal report of difficulty pronouncing certain sounds and hearing impairment at age 7 years, tympanostomy tube insertion at any age up to 8 years, and a history of suspected coordination problems. The contribution of these findings to our understanding of risk factors for persistent SSD and the nature of the condition is considered.

**Conclusion:** Variables identified as predictive of persistent SSD suggest that factors across motor, cognitive, and linguistic processes may place a child at risk.

children (ALSPAC), autism

speech errors but below the three distortions only (CCD). These children, and diadochokinetic tests gender, socio-economic status, IQ groups were more similar. Implic

**Key words:** ALSPAC, children, disorder, persistent, population, speech

repeated conversational communication the Children's Communication Inventory (a mean age of 9.7 years) and toward a higher level of special education (age of 11.8 years) was associated with a phenotypic profile of a child with a weak signal was fully single-trait association adjustment a combined effect, though multiple sub-communicative, and cog-

results suggest that 5p14.1 is associated with a spectrum population 159 as a m spec-

4-1372)

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by

**Abstract**  
This prospective longitudinal population study observed the speech of 741 children at the ages of 2, 5 and 8 years. At the age of 8, 132 children were categorized as speech impaired. There was strong evidence of differences between the case and control groups in speech sound error measures at the two earlier age points. The pattern of the proportion of errors was similar for cases and controls. There was evidence of a strong relationship between the child's error rate and expressive language at age 2 and between the child's error rate and sentence length at age 5. In multivariable analyses, adjusting for expressive language, parent's social status, maternal age, gender and child's exact age, the increase in odds of being a case as the proportion of errors increased disappeared at 2 years but remained at 5 years. At 5 years, the proportion of speech errors was predictive of ongoing speech errors at the age of 8 years; the adjusted odds of having speech errors at 8 years increased by between 21 and 44% with every 10% rise in the proportion of errors in the target patterns.

**Keywords:** Phenology, ALSPAC, natural history, speech impairment, speech sound disorders.



Born in Bradford is helping to unravel the reasons for this ill health and bring new scientific discovery to the world. It is also providing a catalyst for communities to work with the NHS and local authority to improve child health and wellbeing.

# Cleft Collective



The Cleft Collective cohort studies will investigate the biological and environmental causes of cleft, the best treatments for cleft and the psychological impact of cleft on those affected and their families.

- In the future our research will help answer the three key questions that families ask:
  - What has caused my child's cleft?
  - What are the best treatments for my child?
  - Will my child be OK (both now and in the longer term)?



# Questions related to language from the British Cohort Study 1970 (BCS70) and the Millenium Cohort Study (MCS)

James Law  
Professor of Speech and Language Science



Australian Government  
National Health and Medical Research Council

# Two important questions..

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- One of the key issues associated with developmental language disorders or language differences generally is “what happens and does it really matter – for the children, for the family, across school, for socio-emotional wellbeing, for employment, for adult achievement etc etc.
- Clinical studies can rarely answer these questions because you need to know what everyone else does – ie not just those with problems
- The second question is “if it does what can you do about it”. This is an intervention question which is rarely possible to address from cohort studies because the information simply is not there.
- Similarly, clinical studies without the relevant controls cannot answer this question.

## Some refinement to the “what happens” question..

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What is the evidence for social inequalities “conditioning” language – ie predicting language?

How do language profiles change over the preschool period?

Do differences between more and less able children persist?

Do our predictors work differently at different parts of the distribution?

What are the long term (adult) consequences of language difficulties?



# The Millenium Cohort Study (MCS)

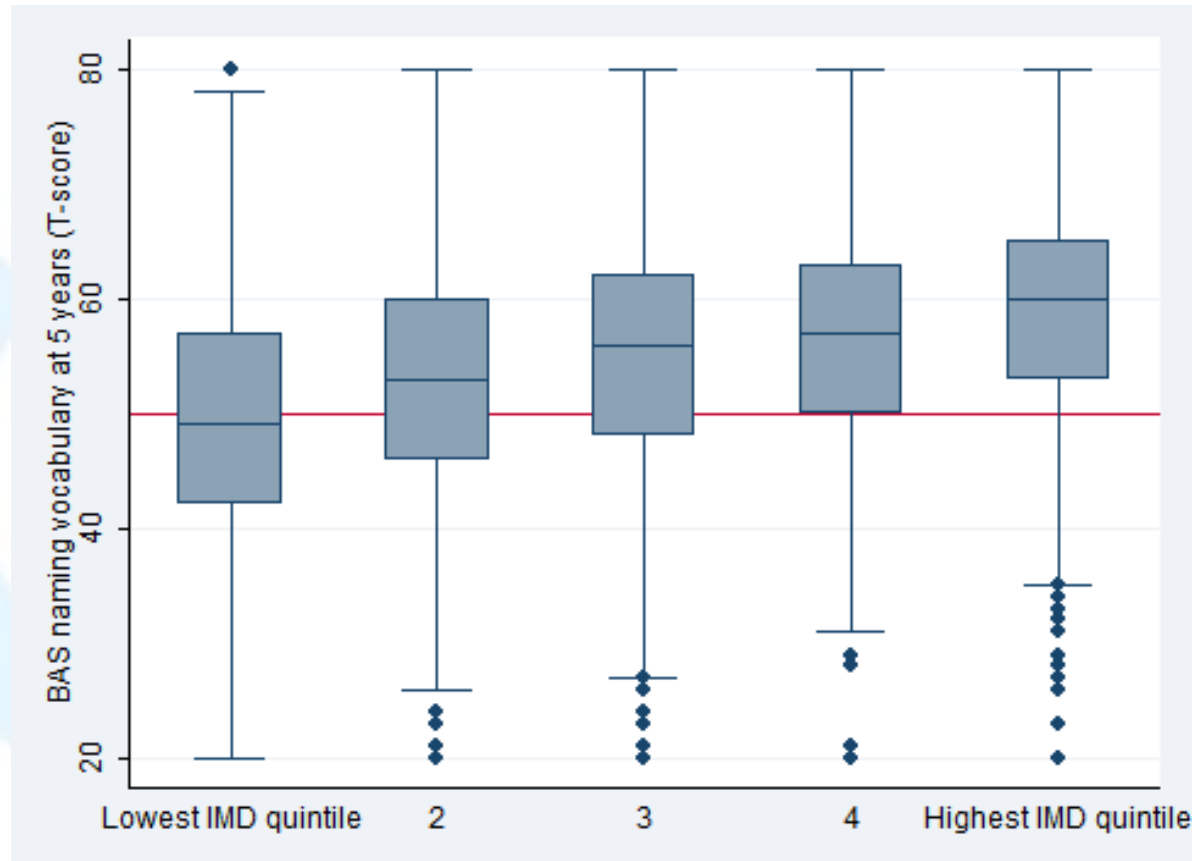


# The Millenium Cohort Study (MCS)

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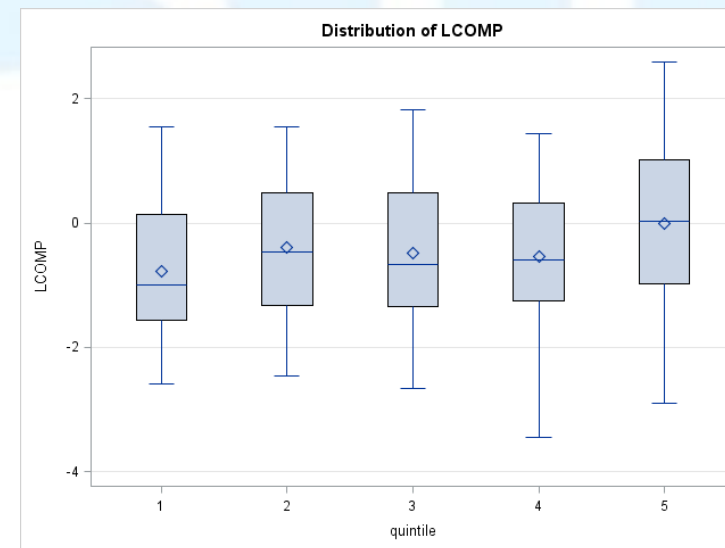
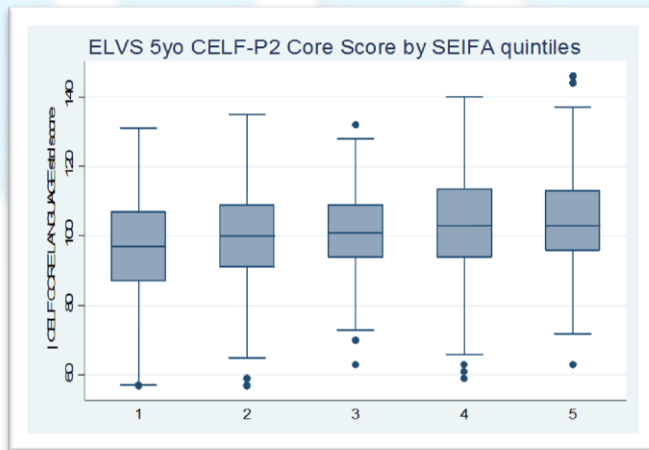
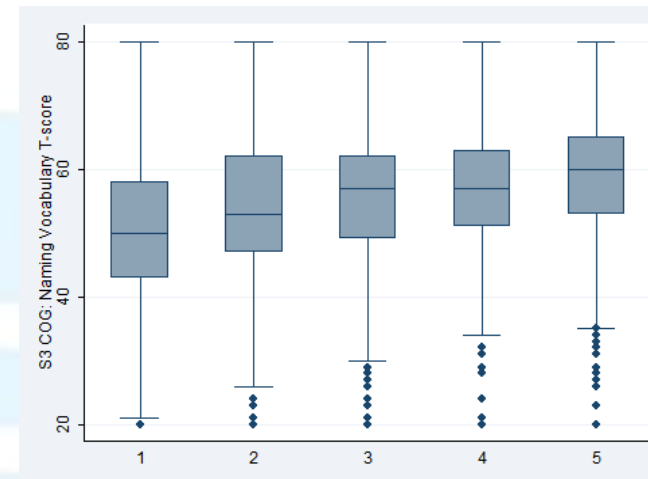
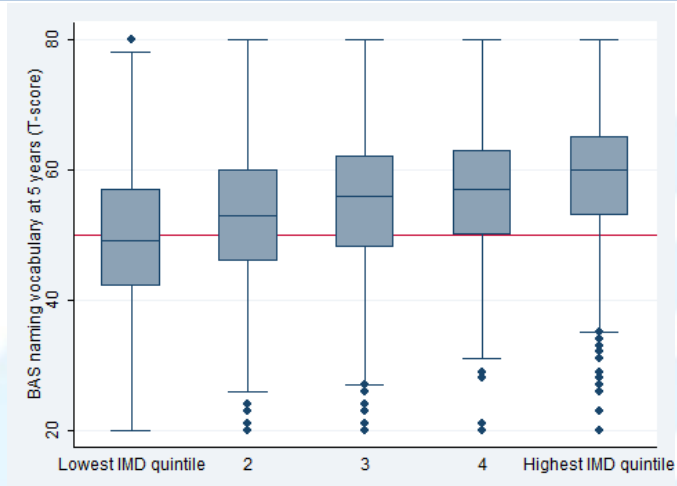
- The Millennium Cohort Study (MCS) is a national birth cohort of children born in the UK in 2000/2001 with seven sweeps surveys (10 months, 3, 5, 7 and 11 years). Over 18 thousand children were initially sampled. Inevitably attrition increases over time;
- At 3, 5, 7 and 11 different scales of the British Ability Scales (BAS II) were used (Naming Vocabulary [at 3 and 5], Single word Reading at 7 and verbal similarities at 11). At three years we also have the Bracken Scale of School Readiness;
- At 5 years 13,016: males n=6566 (50.4%) females n=6450 (49.6%).

# Naming vocabulary at five years from The Millenium Cohort Study



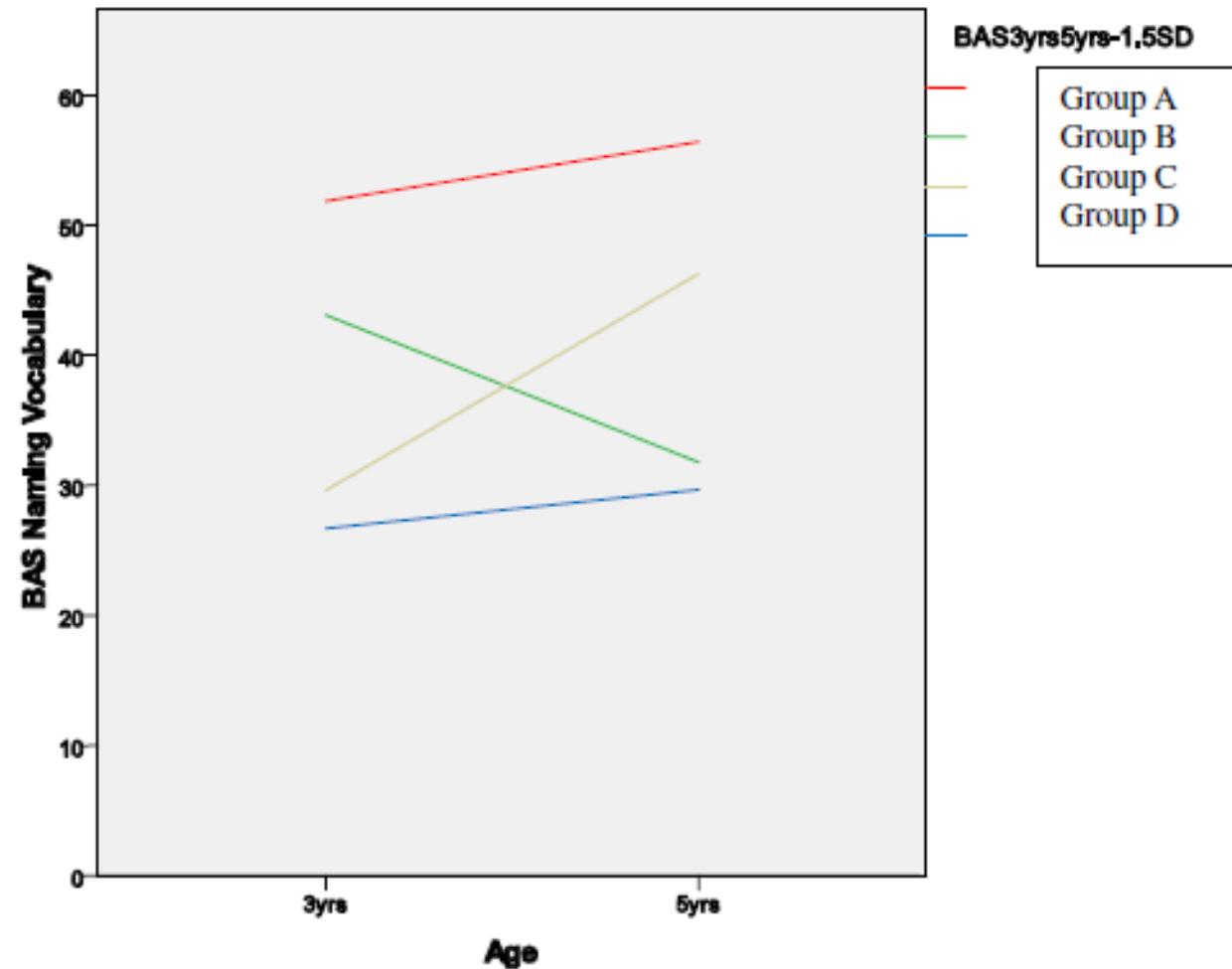
Law, J., Todd, E. Clark, J. Mroz, M. & Carr, J. (2013) *Early language delays in the UK*  
London: Save the Children Fund.

# Language and socio-economic status



# 1. MCS - Patterns of change on the BAS Naming vocabulary between 3 and 5 years (N=13016] (Law et al.2012)

Group A, the **Typical Language Group** (TL) (n=12066) had scores within normal limits at both three and five years  
Group B was an **Increasingly Vulnerable Language Group** (IVL) (177) had typical development at three years but language delay by five years  
Group C was a **Resilient Language Group** (RL) (n=572) was language delayed at three years but developing typically by five years  
Group D was a **Consistently Low Language Group** (CLL) (n=201) which had language delay at three and five years.





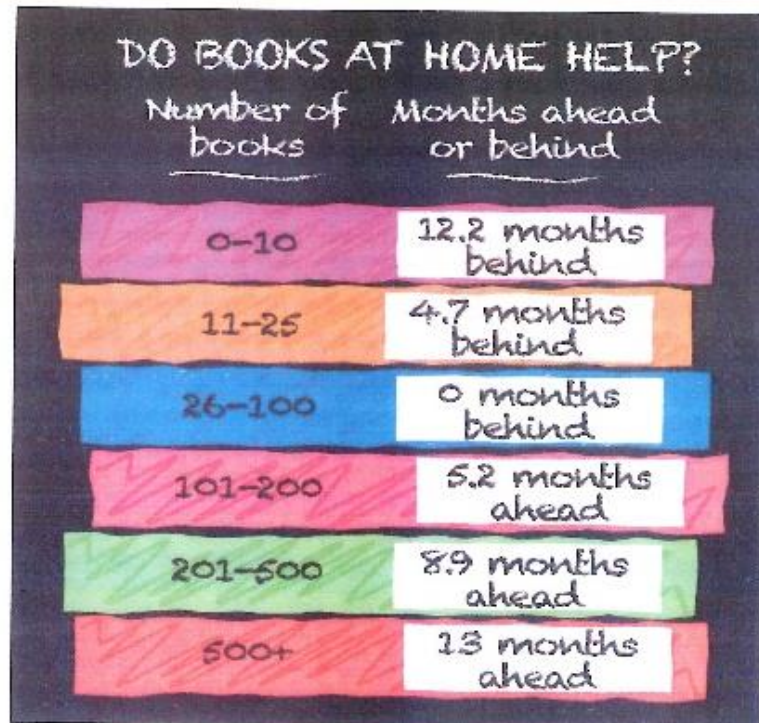
# MCS

	Months of development ahead or behind the average at 3 subsequent ages		
“School readiness” at 3 years	At five years (vocabulary)	At seven years (single word reading)	At eleven years (verbal similarities)
Delayed (bottom 10%)	-13.9	-9.8	-14.1
Advanced (top 20%)	8.0	8.4	9.5
Very Advanced (top 5%)	13.0	16.4	17.0
Difference between top and bottom	26.9m	26.2m	31.1m

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% of age	44.8	31.2	23.5

# THE SUN ONLINE CONTINUED (8<sup>TH</sup> Sept)




# THE SUN (12<sup>TH</sup> Sept)

34 Sun Friday, September 12, 2014

## LITTLE STORIES FROM BIG STARS

**Sun**  
GET KIDS  
READING



10 WEEKS OF SHORT STORIES FROM  
YOUR FAVOURITE CELEBRITIES.  
EVERY SATURDAY STARTING TOMORROW.

**THE Sun**  
Save the Children

# But does it depend on how you chop up your outcome measure?

- Factors predicting language development start early and often persist
- Some suggestion that the capacity to make predictions may be sensitive to the distribution of the outcome
- For example, the differences between the top and the bottom of the distribution remain the same over time (Bradbury et al. 2015) but reduce as a proportion of the age at which those skills are measured (Law et al. 2014)
- Traditional Ordinary Least Squares (OLS) regression models which are often the default analytical approach but may increase the risk of encountering the 'mean focus fallacy' (Hohl, 2009), namely that predictors operate consistently across the distribution of the dependent variable
- Long recognized in econometric modeling of income distribution an alternative is **quantile regression**
- suggestion that topics related to child language and other aspects of development were particularly likely to benefit from quantile approaches (Petscher & Logan, 2014).



# Variables

**Dependent variable:** child language performance on the British Ability Scales (BAS II) standardized (M 100; SD 15) Verbal Similarities subtest (Elliott, Smith & McCulloch 1997) at eleven years of age.

**Independent variables:**

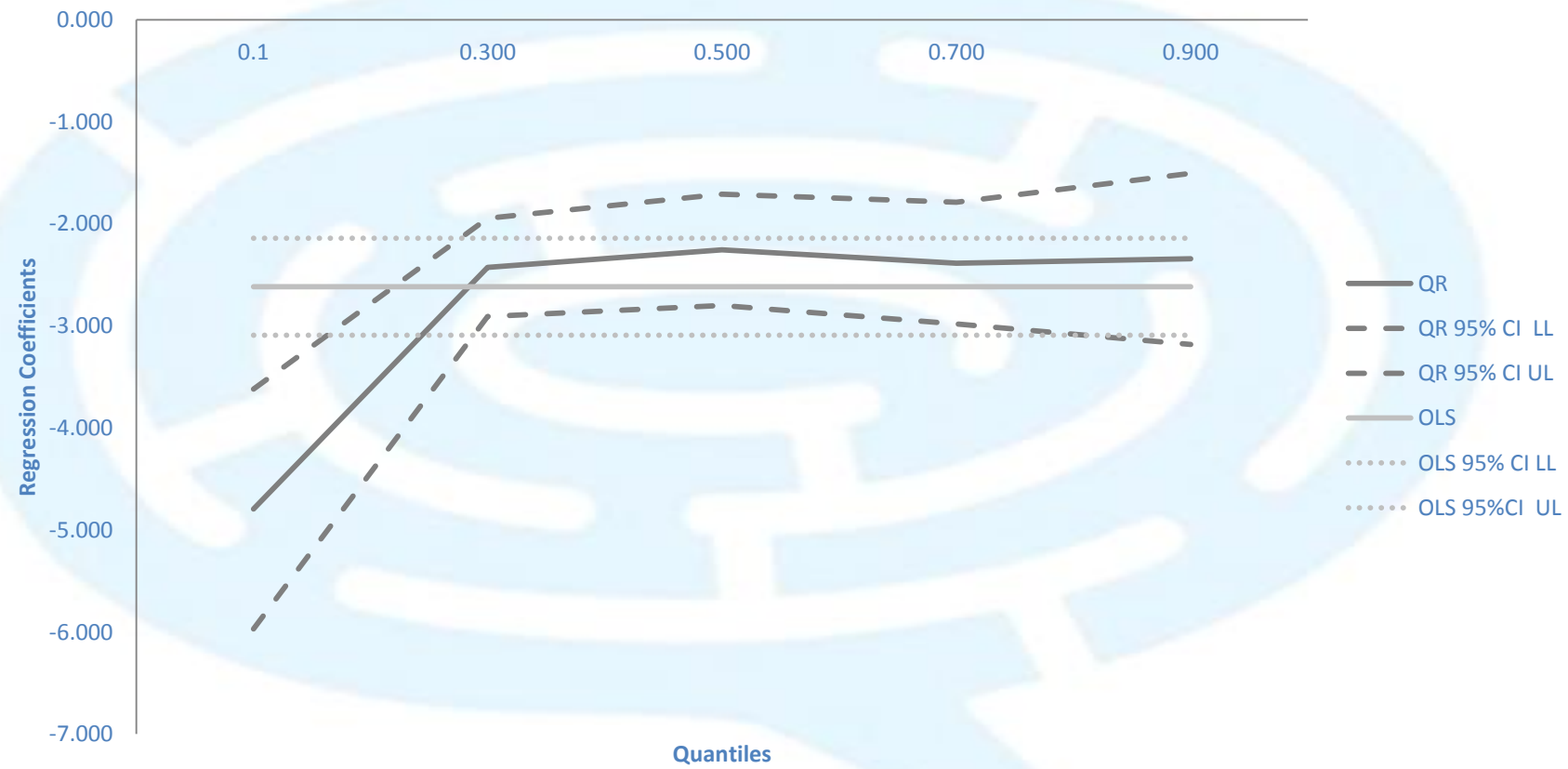
Child and family factors : admission to the special care, neonatal or Intensive care unit after birth; child born small for gestational age. Family poverty. Data on gender and the number of siblings in the household (Parity) were also included.

Home activities (child ages 3 and 5 years). Parental involvement was measured by asking parents:

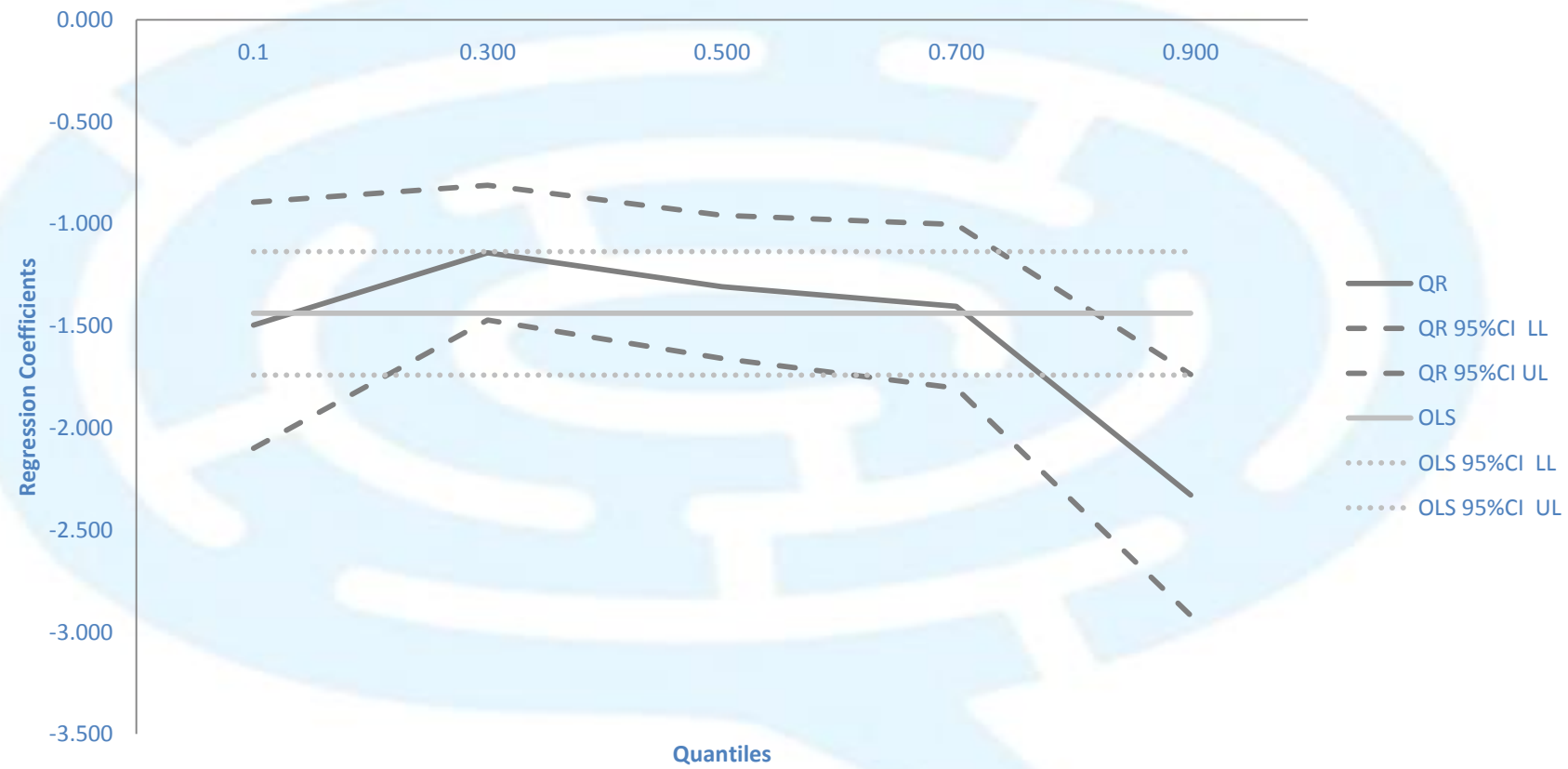
- how often the child was read to, @ 3 years (1-2 x a week or less);
- how often the child was read to, @ 5 years (1-2 x a week or less);
- (b) how often the child was told stories @5 years (1-2 x a week or less),
- (c) how often the child visited the library @5 years (1-2 x a week or less);
- (d) how often the child was taken to the library @ 3 years, (1x a month or less);
- (d) how often the child was taken to the park @ 5 years (1x a month or less);
- (e) How long did the child time spend watching TV @ 3 years (3 hours a day or less);
- (f) How long did the child time spend watching TV @ 5 years (3 hours a day or less).

Child vocabulary (child age 3 years). The Naming Vocabulary scale of the British Ability Scales II

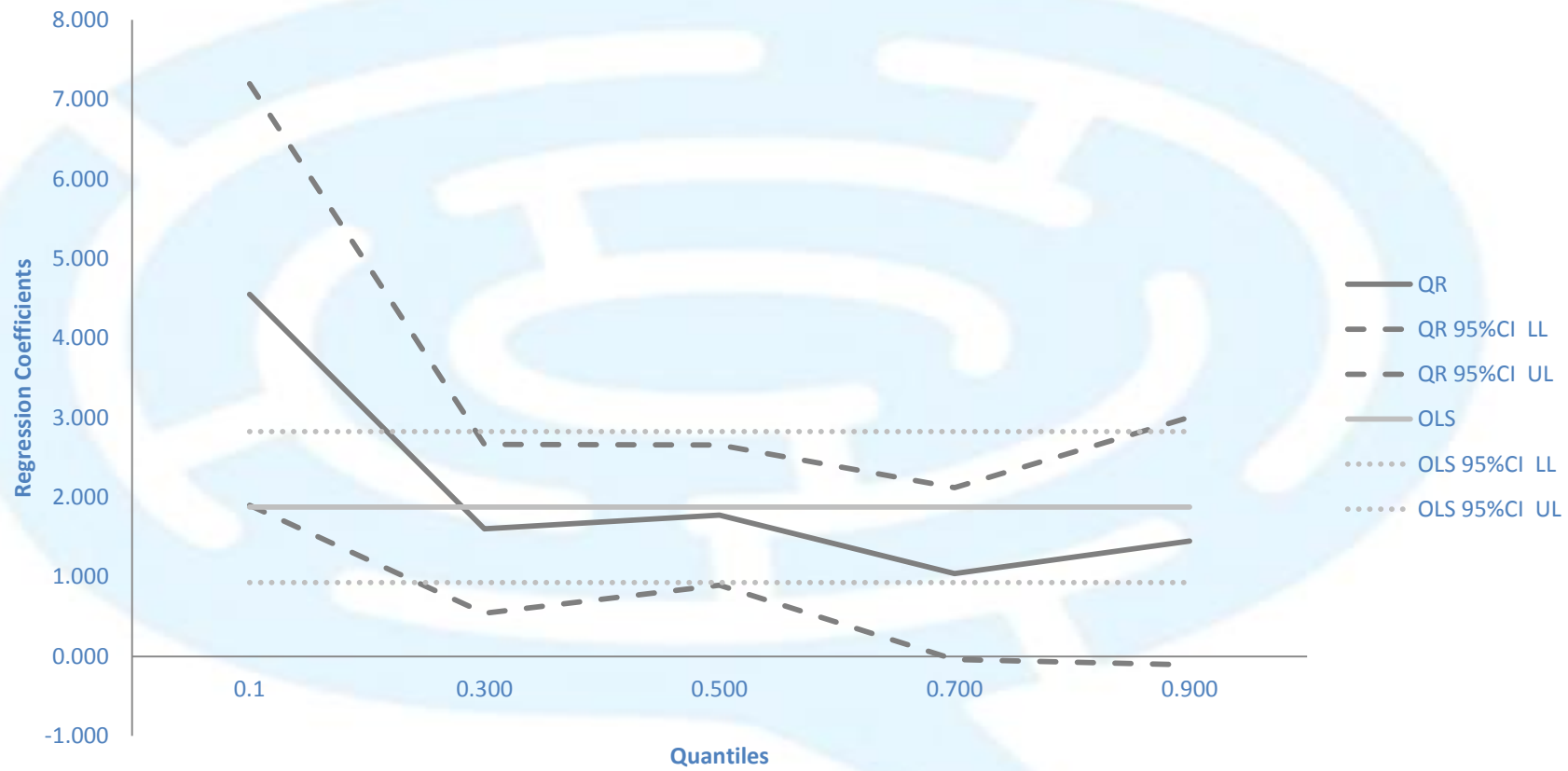
## Quantile Plot - Poverty



## Quantile Plot - Gender



## Quantile Plots - Reading





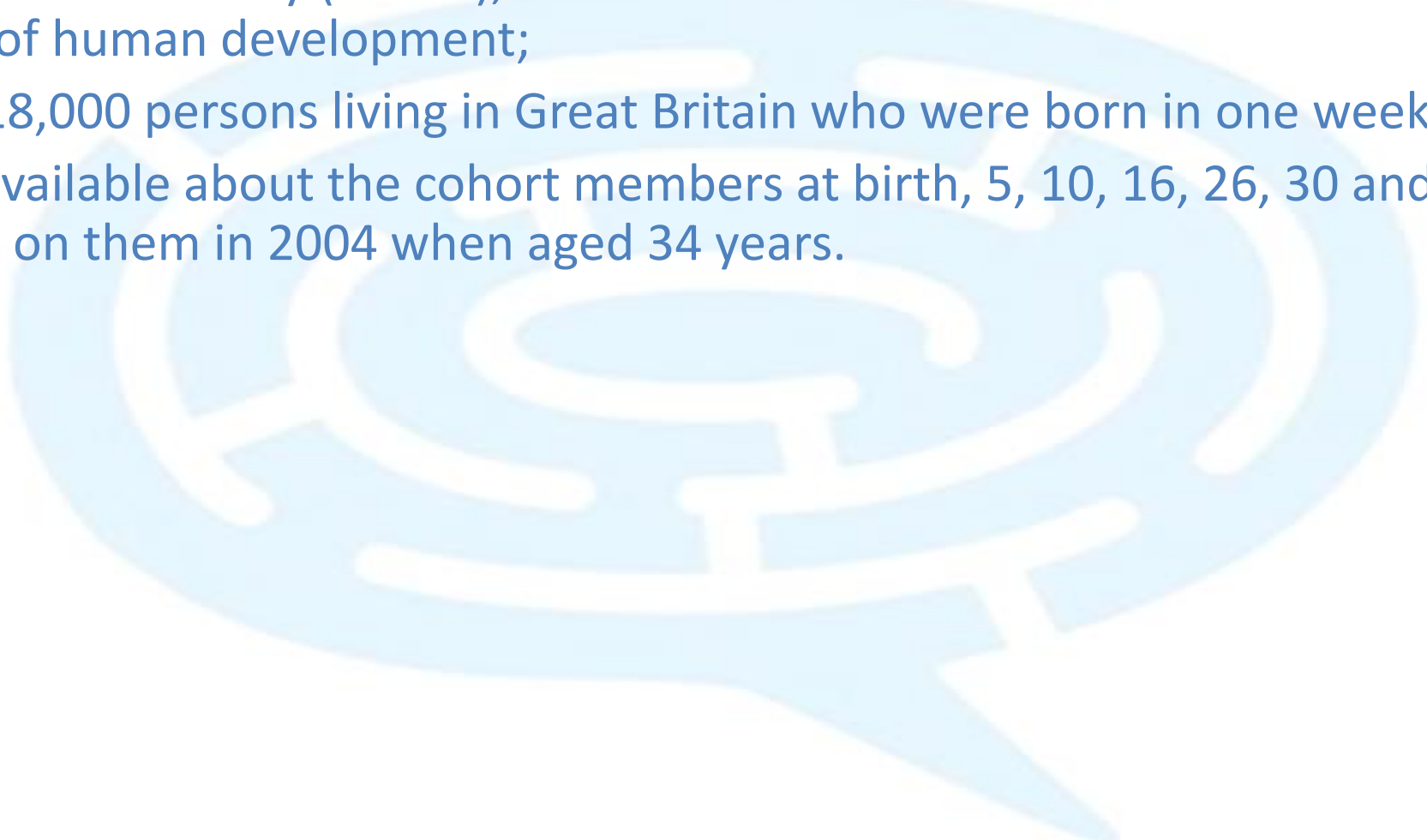
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And long term follow-up...



# The British Cohort Study 1970

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- British Cohort Study (BCS70), one of Britain's richest research resources for the study of human development;
  - Over 18,000 persons living in Great Britain who were born in one week in April 1970;
  - Data available about the cohort members at birth, 5, 10, 16, 26, 30 and here we report on them in 2004 when aged 34 years.
- 

# And the adult outcomes..

## At 34 years

Literacy – adapted measure of reading and writing – nb split at level two literacy, (with poor literacy being defined as being equivalent to a grade D or lower in the national GCSE exam).

Mental health – four scales measuring *Malaise*, *Satisfaction with life*, *Control over life*, and *Self-efficacy* - nb split at none/three or more areas of concern identified;

Employment - months spent unemployed between April 1986 and March 2004 – nb split at +/- one year

# With language as a predictor of adult outcomes?

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3 discrete groups.

“Typical Language Group” (TL) had EPVT and Copying scores falling within the normal range on BOTH assessments;

“Non-Specific Language Impairment Group” (N-SLI) had EPVT scores two or more standard deviations below the mean and scores of at least one standard deviation below the mean on the Test of Copying Skills.

“Specific Language Impairment Group” (SLI) also had scores of two or more standard deviations below the mean on the EPVT and scores of more than one standard deviation above the mean (ie. within the normal range) on the Test of Copying Skills.

# Long term outcomes

Increased odds relative to typically developing group		
	General language difficulties	Specific language difficulties
Literacy	4.35***	1.59**
Mental health	2.9**	1.5
Employment	1.88*	2.2***

# Conclusions

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- Cohorts are excellent for big policy related questions especially where we need to know what has happened to a large group of people over time
- They are good if you have complex questions that need to have a lot of participants
- They are usually excellent when outcomes are in part determined by complex social phenomena
- People are often more easily convinced by data from big representative samples
- BUT limitations: variable clinical and intervention data and many cohorts do not have genetic material

# Next..

- New paper: A second quantile looking at the extent to which language development at five years mediates the relationship between early risks and behaviour and whether that differs for different quantiles
- New grant: **S**ocial In**E**quality and its **E**ffects on child **D**evelopment (SEED): A study of birth cohorts in the UK, Germany and the Netherlands



This project has received funding from the European Union's Horizon 2020 research and innovation programme, the Seventh Framework Programme for research, technological development and demonstration and the Sixth Framework Programme for research and technological development



# **Social InEquality and its Effects on child Development (SEED):**

## **A study of birth cohorts in the UK, Germany and the Netherlands**

James Law

Professor of Speech and Language Science







# NORFACE: Dynamics of inequality across the lifecycle

# Background

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Marked differences in early child development (specifically oral language skills and socio-emotional development) have opened up before compulsory schooling begins. These manifest as social inequalities which, for many, persist through childhood and into work. SEED explores the mechanisms by which this happens by drawing on the best data from a range of different countries.

SEED is in “Early Life Influences and Outcomes”, linking into “Early adult transitions into tertiary education, vocational training and economic activity”, and will feed into European policy and OECD translational projects.

SEED has two principal objectives:

1. To identify the **mechanisms** through which changing social inequalities impact on children’s oral language and socio-emotional development;
2. To identify the implications that these evolving social disparities have for **patterns of performance** at school age and beyond into adolescence and adulthood.

We utilise nationally representative cohort data in the three applicant countries (UK, Netherlands & Germany). Such a pan European programme has never been attempted before, and is extended by complementary co-operation partner country analyses (US, Canada and Australia).

# Specifically we will:

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- Establish the extent to which the two developmental domains work singly or in combination in affecting outcomes and in being affected by gendered, dynamic and institutional environments (WP1, WP2 & WP3).
- Resolve the tension between the stability of language development and the sensitivity to (changes in) social inequalities (WP1 & WP2).
- Establish to what extent preschool social and gender inequalities in development arise through differences in parenting practices and health experiences (WP1).
- Introduce a “clinical” dimension, using large samples to include language and hearing impaired and delayed groups within populations, to understand the moderating effects of social inequality on group developmental outcomes (WP4 & WP5).
- Identify to what extent these early discrepancies can feed into employability and, following this through in one dataset, intragenerational social mobility (WP2).

# And a new proposal..

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Language and communication in adult life chances: an analysis of the ALSPAC cohort

(Wren, Roulstone, Law, Clegg and Heron)

- RQ1 What is the level of and variation in language and communication (L&C)
- RQ2. To what extent is childhood L&C a risk factor
- RQ3. Are there potentially modifiable mediators on the pathway from childhood L&C to adult L&C? for adult L&C?
- RQ4. What is the relationship between classes of adult L&C and a range of SE&MH outcomes?
- RQ5. What is the role of childhood L&C as a potentially modifiable mediator on the pathway between early social-risk and young-adult SE&MH outcomes?

# Thank you for listening

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