

Educational outcomes following preterm birth: What teachers need to know

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Outline

- Why is preterm birth important?
- What is preterm birth?
- Long term effects on development
 - Neurodevelopmental disability
 - Motor & cognitive development
 - Attention, social & emotional outcomes
- Impact on learning & education
- Supporting children born preterm



Why is preterm birth important?

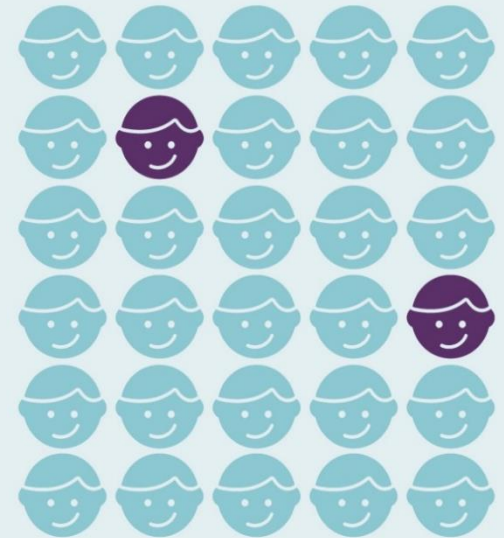


- Globally, 15 million babies are born preterm each year
- All newborns are vulnerable, but preterm babies are acutely so. Many require special care simply to remain alive.
- Many of the preterm babies who survive face a lifetime of disability.
- An increased awareness of the long-term consequences of preterm birth is required to fashion policies to support these survivors and their families as part of a more generalized improvement in quality of care.

Why is preterm birth important?

- In the UK, 7-8% of babies are born preterm
- Preterm birth rates are rising, as are survival rates
- The number of preterm children entering schools is increasing
- Long term outcomes do not appear to be improving despite improved survival and neonatal care
- Most preterm children attend mainstream school
- Almost all education professionals will be responsible for supporting children born preterm
- Knowledge and preparation about health conditions is crucial for appropriate educational management

2 children in an average UK primary school class are born preterm



Why is preterm birth important?

SSAT | Inquire
inspire
innovate
impact

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Research
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Complex learning difficulties and disabilities research project
Developing meaningful pathways to personalised learning

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Welcome

Welcome to SSAT (The Schools Network) Ltd Complex Learning Difficulties and Disabilities (CLDD) research project website.

The Department for Education identified through feedback from schools that educators needed a new teaching and learning framework to meet the needs of children and young people with Complex Learning Difficulties and Disabilities (CLDD). SSAT was commissioned to develop resources to support schools in educating these children.

Further details about the project can be found on the 'Project information' page, reached by clicking on the named button to the left. To access the three tools which make up the Engagement for learning resource framework, please click on the 'Project resources' button or the photo buttons below.

This project is supported by the
**Department for
Education**

“This new generation of children and young people includes some with rare chromosomal disorders, some who survived extreme prematurity or multiple disabilities at birth, and others affected by prenatal drug and alcohol abuse. These children have complex learning difficulties and disabilities (CLDD). They learn and respond differently to previous generations of children with profound and multiple/severe learning difficulties.”

What is preterm birth?

Completed weeks of gestation																			
22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
															Term				
All Preterm																			
Very Preterm										Moderate		Late							
Extremely																			
<28⁺⁰ weeks' gestation Extremely preterm 4,200 births per year 0.5% of all births						28⁺⁰ - 31⁺⁶ weeks' gest. Very preterm 6,600 births per year 0.9% of all births				32⁺⁰ to 36⁺⁶ weeks' gestation Late and moderately preterm 50,000 births per year 6.5% of all births					37⁺⁰ to 41⁺⁶ weeks' gestation Term 705,000 births per year 92.1% of all births				

The long term consequences of preterm birth . . .

- **Key findings:**
- Preterm birth affects multiple areas of development
- Most research is focused on very preterm children, but effects can be seen after birth at all preterm gestations
- The prevalence and severity of problems is related to the baby's gestational age at birth
- The earlier the baby is born, the greater the risk s/he will develop long term problems
- Problems are evident in infancy and persist throughout the lifespan

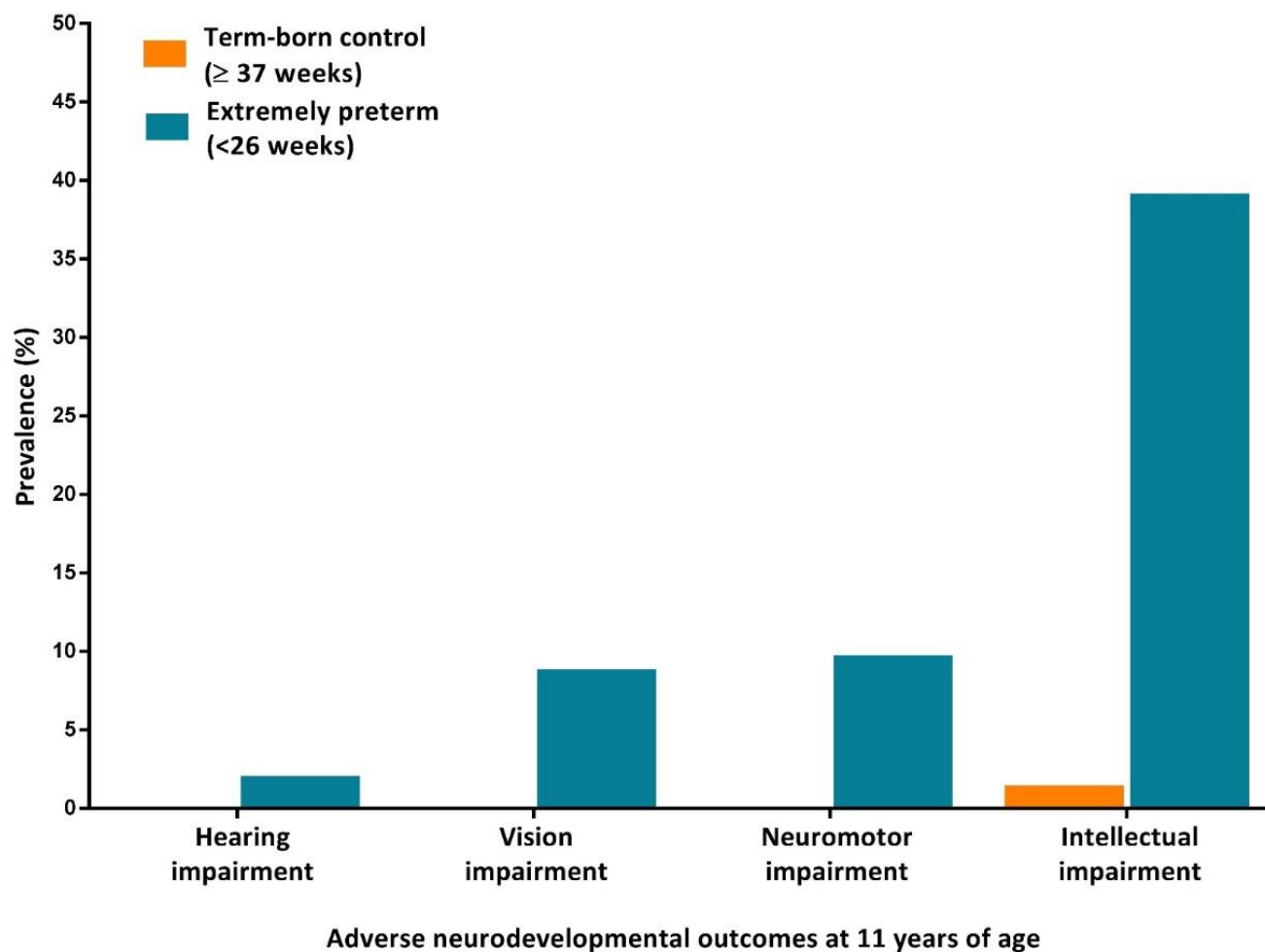


The EPICure Studies

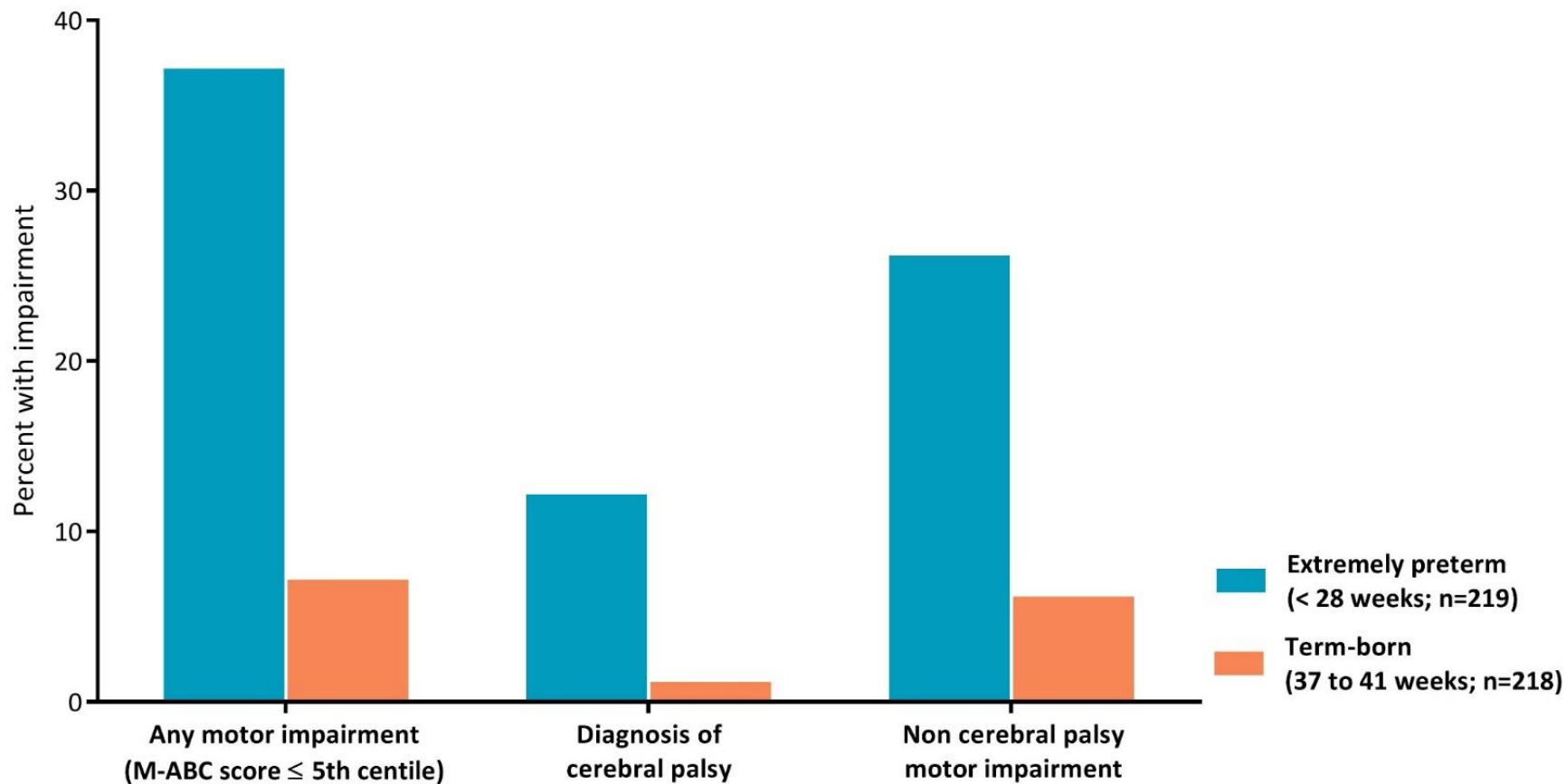
- National cohort study of survival and outcome following extremely preterm birth
- All babies born before 26 weeks of gestation in a 10 month period in 1995
- Babies born in the whole of the UK and Ireland were identified
- Surviving children assessed at:
 - 2.5 years
 - 6 years
 - 11 years
 - 19 years




Neurodevelopmental disability – 11 years



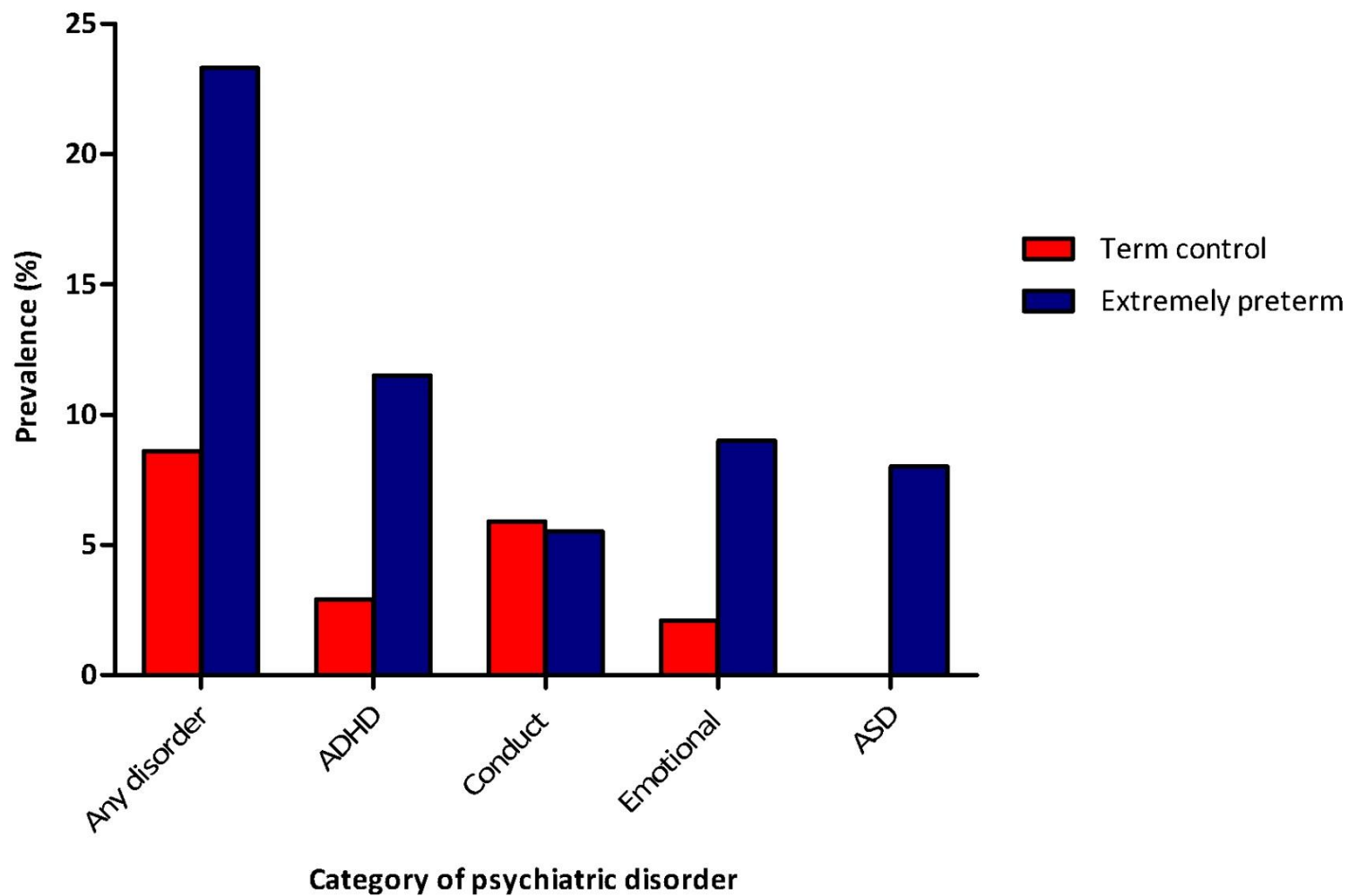
Motor impairment – 8 years



Cognitive problems are not just low IQ

- Consistent findings from many studies across the world:
 - Simultaneous information processing worse than sequential
 - Non-verbal IQ is lower than verbal IQ
 - Deficits in a wide range of general cognitive skills:
 - Working memory
 - Attention
 - Visuo-spatial skills
 - Executive functions
 - Processing speed
 - Language deficits
 - Fine motor coordination
 - Sensory processing
-  Core deficits underlying learning difficulties

Psychiatric disorders



Becky's story

Summary of behavioural, social and emotional outcomes

- **Increased risk** for problems & disorders:
 - Inattention / ADHD
 - Social and communication problems / ASD
 - Anxiety and worries / Emotional Disorders
- **No more likely** to have externalising behaviour problems than children born at term
- Special constellation of problems means preterm children may present differently to other children with BSED
- Problems may be missed in educational settings . . . ?

Impact on learning and school performance

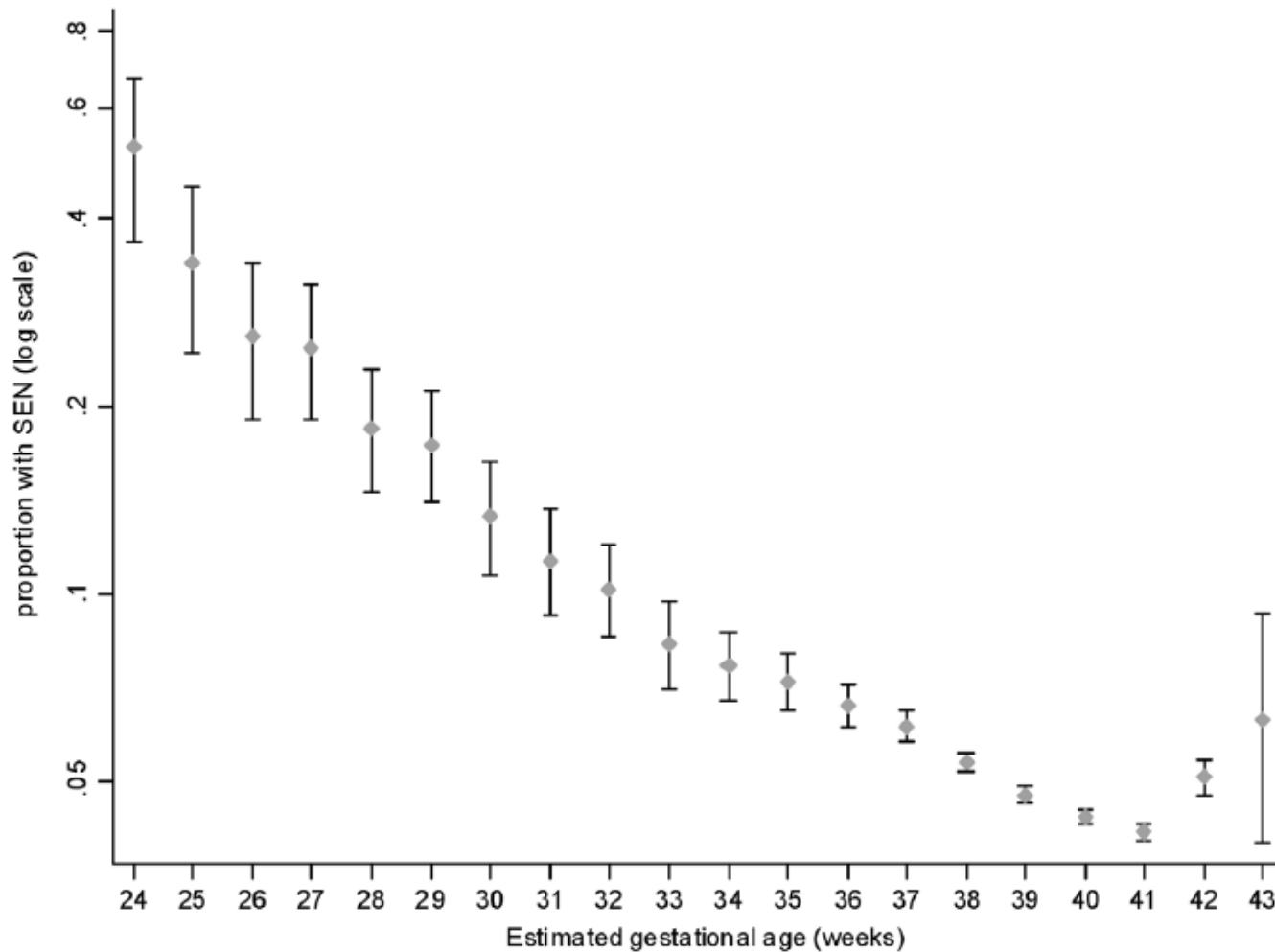
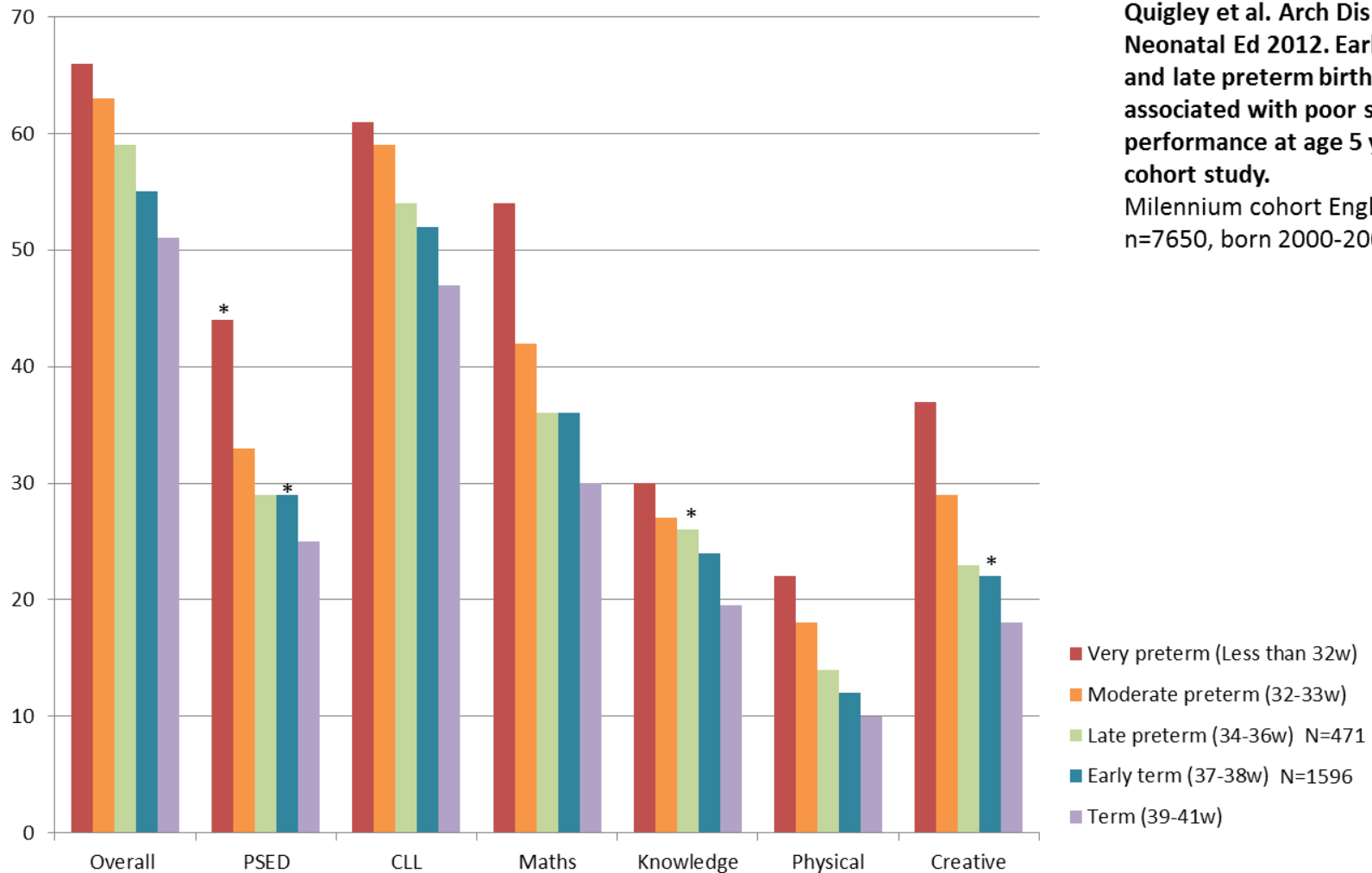
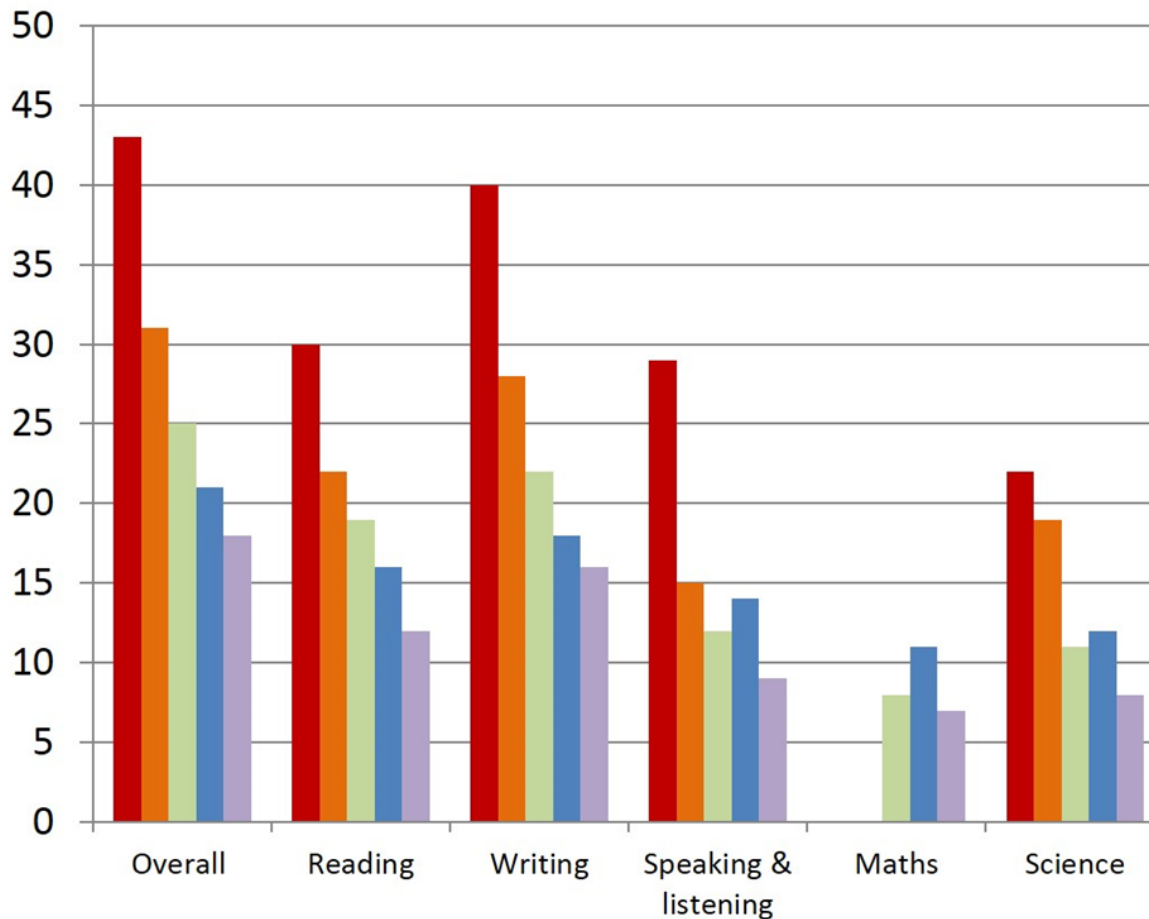


Figure 1. Prevalence of special educational need by gestation at delivery.
doi:10.1371/journal.pmed.1000289.g001

Academic attainment – Early Years Foundation Stage



Academic attainment – Key Stage 1



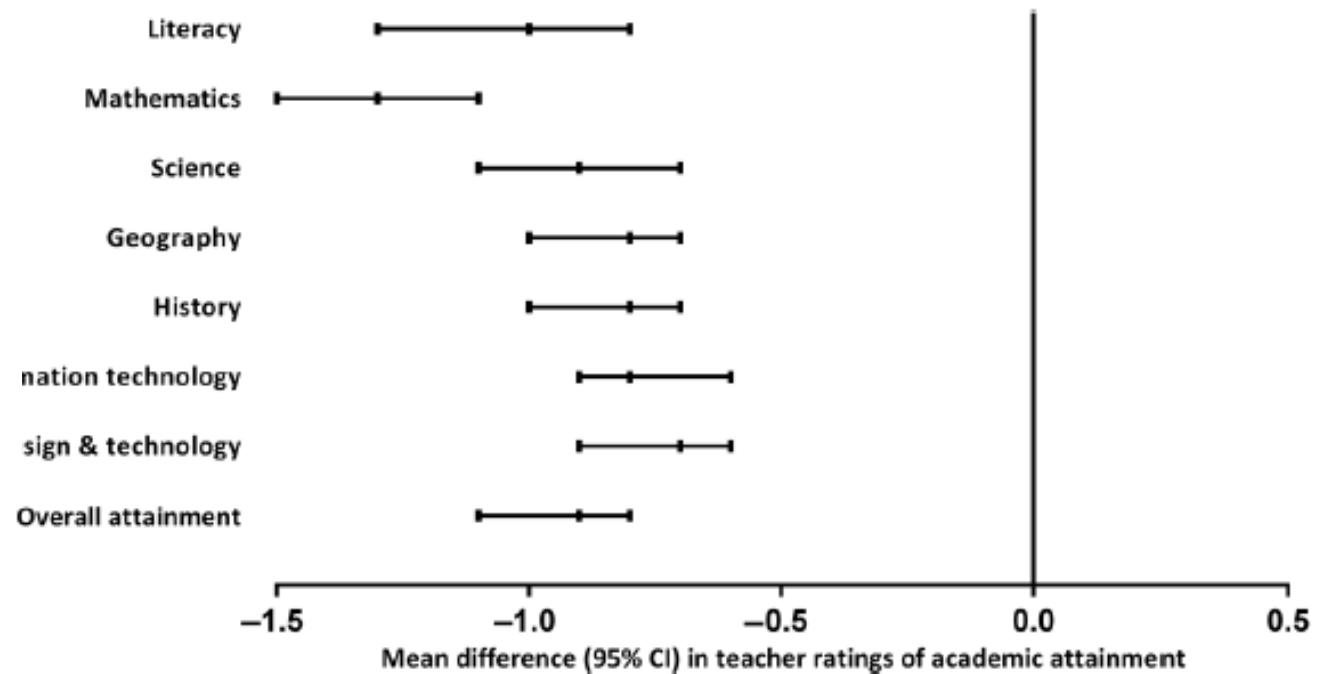
Chan & Quigley. Arch Dis Child Fetal Neonatal Ed 2014. School performance and age 7 years in late preterm and early term birth: a cohort study.

Population based cohort England, n=6031, born 2000-2001. Key Stage 1 teacher assessments in Year 2. Outcome is % not achieving the expected level of performance in reading, writing & mathematics.

- very preterm (<32)
- moderate preterm (32-33)
- late preterm (34-36)
- early term (37-38)
- Full term (39-41)

Greatest difficulties in mathematics

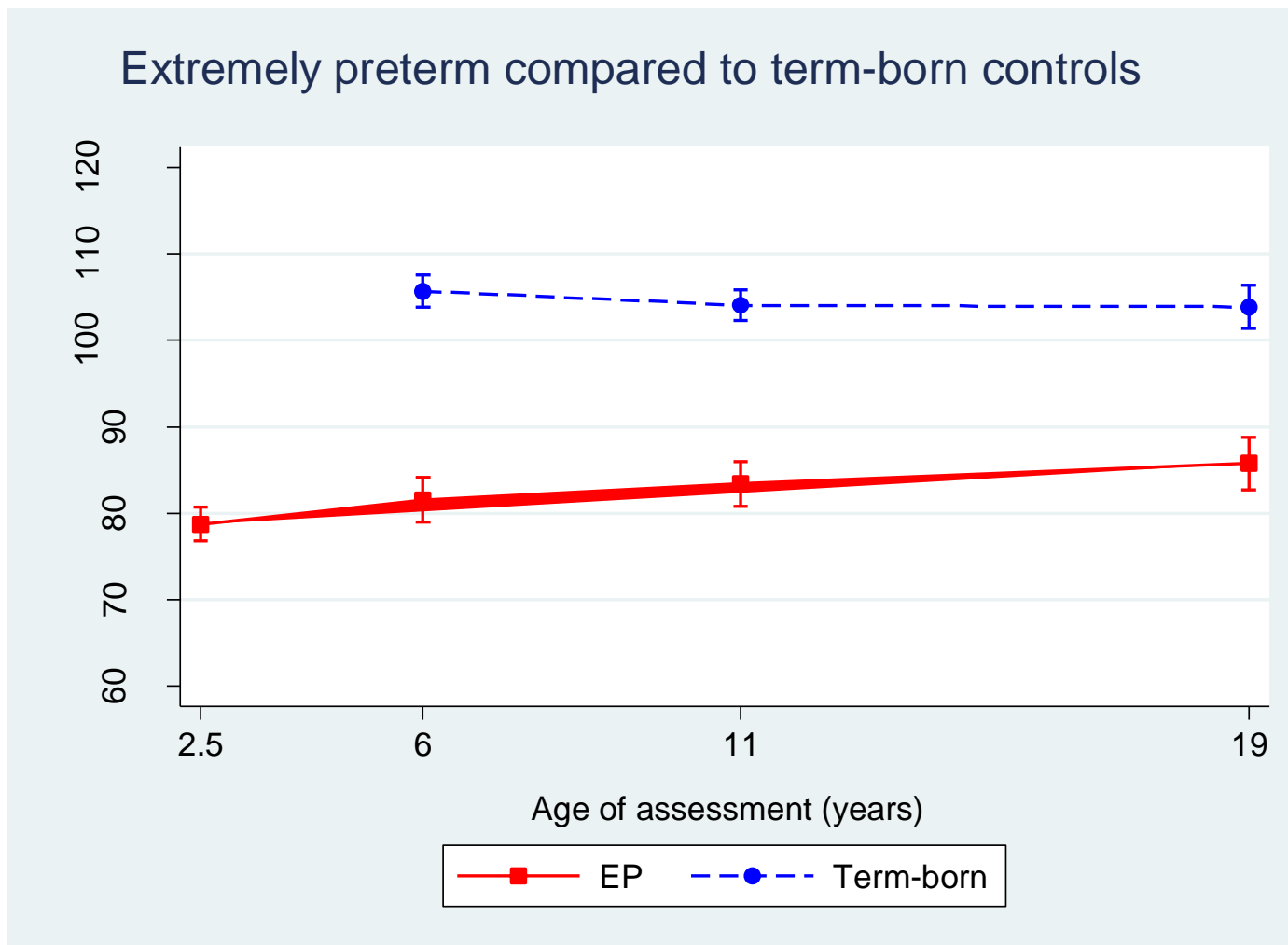
Figure 2 Mean difference (95% CI) in teacher ratings of academic attainment for 145 extremely preterm children (<26 weeks gestation) and 171 term-born controls assessed at 11 years of age in the UK & Ireland EPI Cure Study.⁵¹



Understanding mathematics difficulties

- Maths problems appear to be related to poor general cognitive abilities
 - working memory
 - visuospatial skills
 - not deficits in number skills
- Interventions for children with Dyscalculia are unlikely to be effective for preterm born children
- SSAT . . . different kinds of difficulties . . . ?

“It’s OK, they’ll catch up eventually . . .”



Academic trajectories

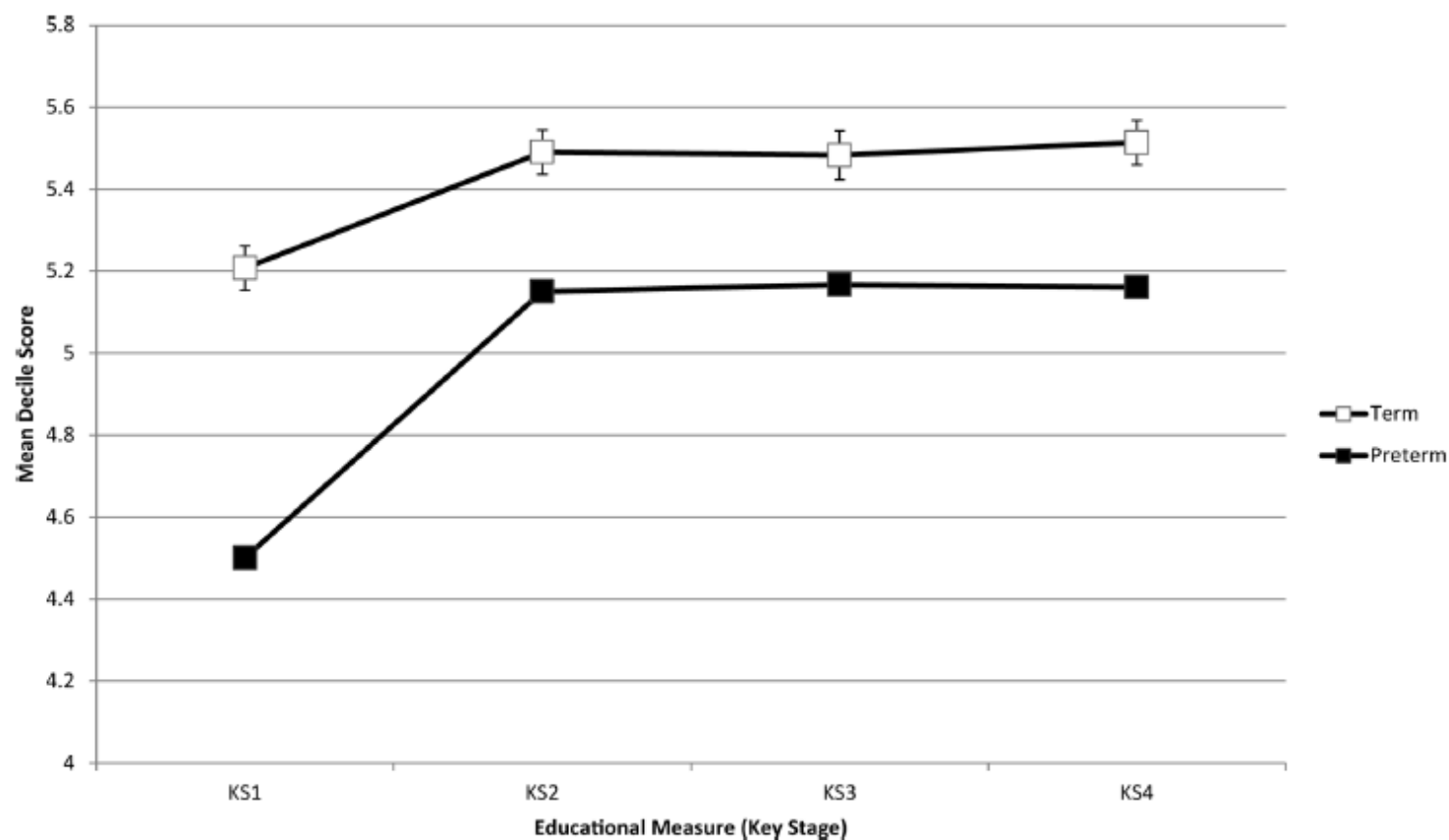


Figure 1 Summary measures of Key Stage scores at each time point, split by gestational age groups.

Putting it all together . . .

Neurosensory

Cerebral
Palsy/neuromotor
impairment

Vision & hearing
impairments

Fine motor deficits

Visuospatial deficits

Cognition

Low IQ, especially
nonverbal IQ

Working memory

Processing speed

Executive function

Inattention

Behaviour and emotions

Attention
problems/ADHD

Peer relationship
problems/ASD

Anxiety/Emotional
disorders

No increased risk for
conduct problems

Learning and attainment

Learning difficulties

Poor attainment

Special educational
needs

Lower occupational
status and earning
potential as adults

Supporting children born preterm

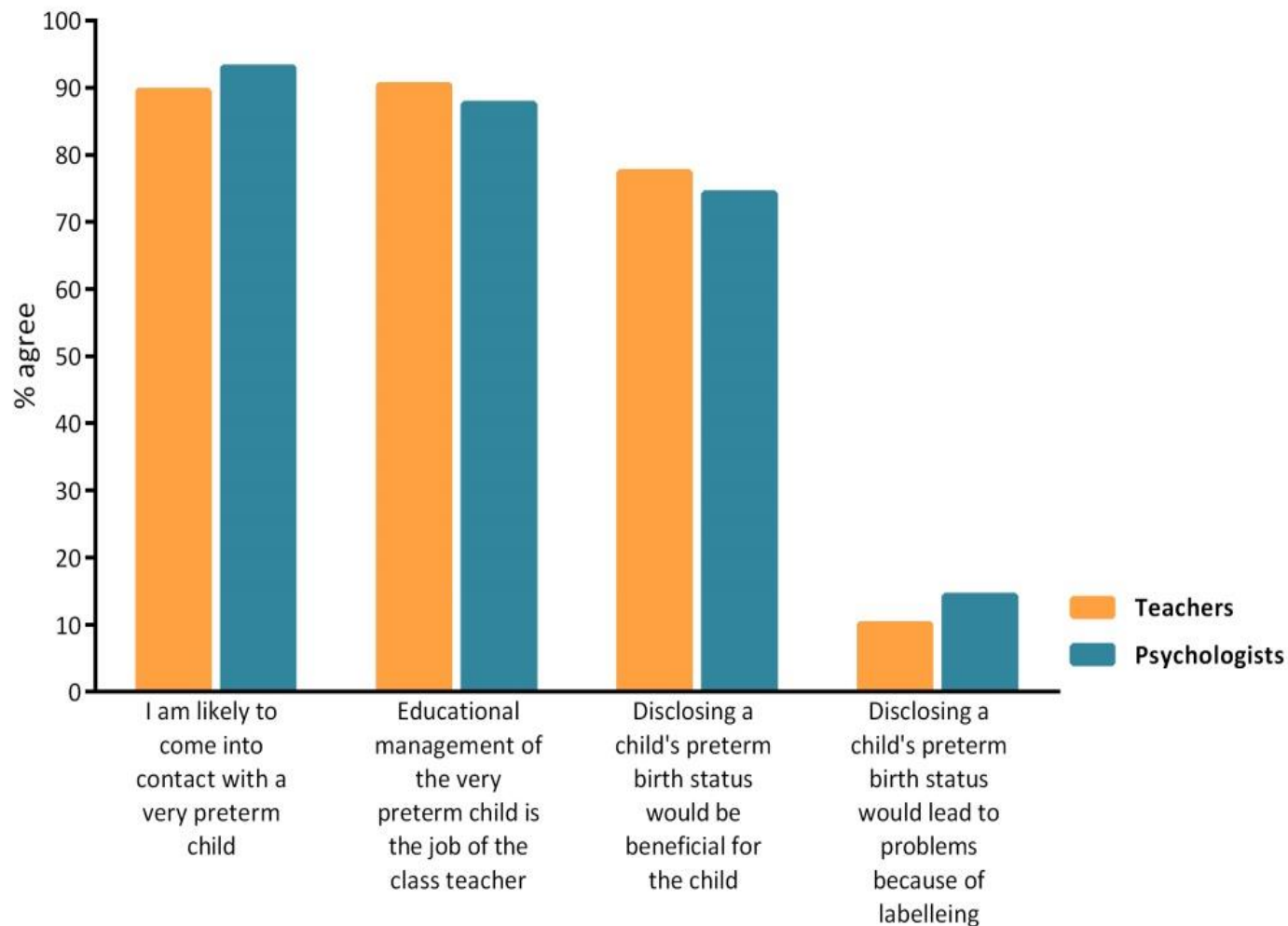
DEVELOPMENTAL MEDICINE & CHILD NEUROLOGY

COMMENTARY

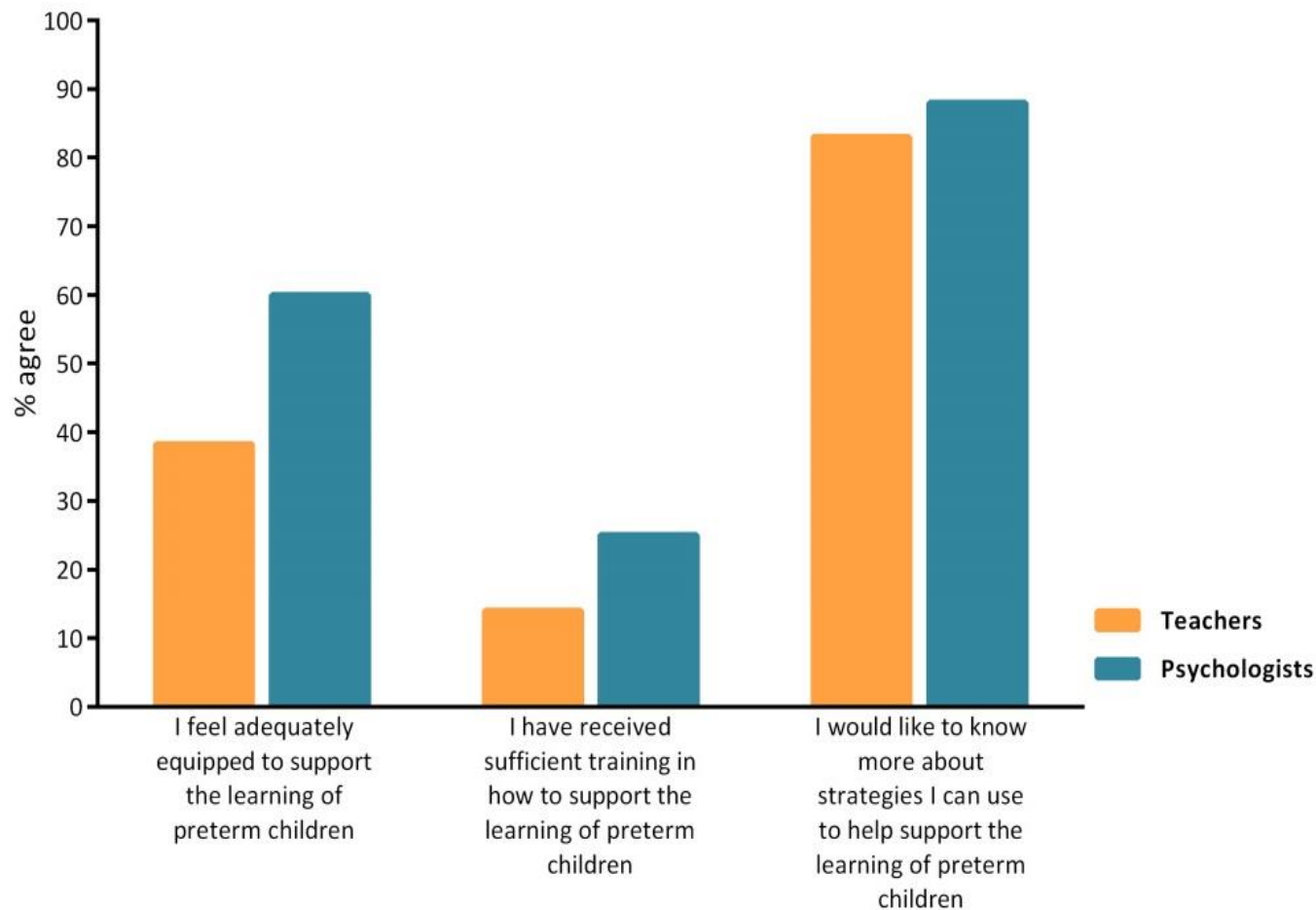
Timing and content of interventions to enhance cognitive performance of very-low-birthweight children

take place for VLBW children? Previous research has indicated that interventions in infancy may have short-term but not positive long-term effects on cognitive or academic performance.² It is not surprising that interventions in the first few months of life may not be enough to solve the complex issue of cognitive deficits in preterm children at school age. This highlights the need for intervention at around school age, either before school entry or early on in school.

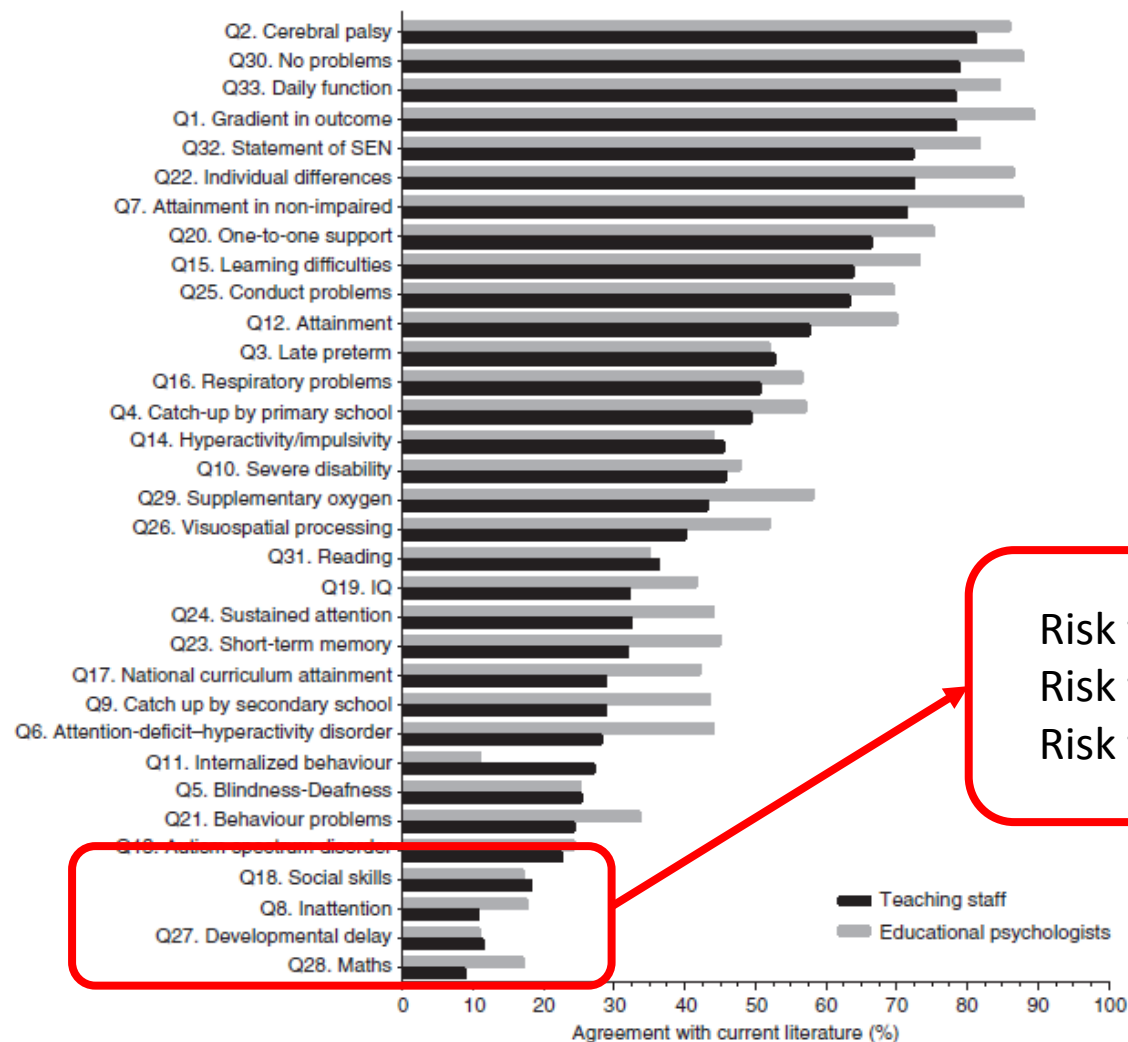
Education professionals' knowledge of preterm birth



Education professionals' knowledge of preterm birth



Education professionals' knowledge of preterm birth



Risk for poor social skills
Risk for inattention
Risk for maths difficulties

Preterm birth e-learning resource

- Designed for education professionals
- 5 short 10-minute sections
- Approximately 1 hour of learning
- Control own pace of learning
- Engaging interactive multi-media content
- Quizzes to test learning objectives
- Strategies to support children in the classroom – pdf builder
- Co-designed with stakeholders



PRISM
Premature Infants' Skills
in Mathematics

What is preterm birth?



PRISM
Premature Infants' Skills
in Mathematics



What is preterm birth?

supported by
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4. Do preterm babies catch up?

It is a common misconception that children born preterm who have developmental or learning difficulties in the early years will catch up with their peers over time. Research has shown that on average preterm children's difficulties tend to persist throughout primary and secondary school and that as a group, children born preterm, are unlikely to catch up with their peers.

Select the images of the students opposite to find out how preterm birth can affect academic attainment across all stages of schooling.

Discover how preterm birth can affect academic attainment across all stages of learning



5-7 years
Key Stage 1

7-11 years
Key Stage 2

11-16 years
Key Stage 3 & 4

16 years +
Further and Higher Education

6. Quiz

You have now reached the end of this section about preterm birth. Test your learning with our quiz below.



Supporting children born preterm

- Overview of the developmental history of the individual child is essential.
- Access to specialist support and advice - professionals should work together to develop a trans-disciplinary approach when both assessing and planning the child's individual learning pathways.
- It is important to treat the child holistically, and reduce the possibility of fragmented intervention.
- Close liaison with families and carers is needed to help meet the complex needs of the child.
- Appropriate resources to meet each learner's unique and complex needs. Learning is mediated through social relationships. Educational intervention needs to respond to where the child is both developmentally and socially.
- **Training for staff to recognise the possible learning disabilities and difficulties associated with preterm birth.**

Summary

- Children born preterm are **at risk** for cognitive, attention, social and emotional problems
- Their difficulties may be hard to spot in the classroom
- These difficulties can impact on attainment at school
- Developmental follow-up only to 2 or 4 years of age
- Teachers have a key role in supporting these children
- Professionals need to be aware of the issues
- Identify difficulties & provide appropriate support
- **Need an individualised approach – prematurity is a risk factor not a diagnosis**



Thank you

 @SamJPsych

