

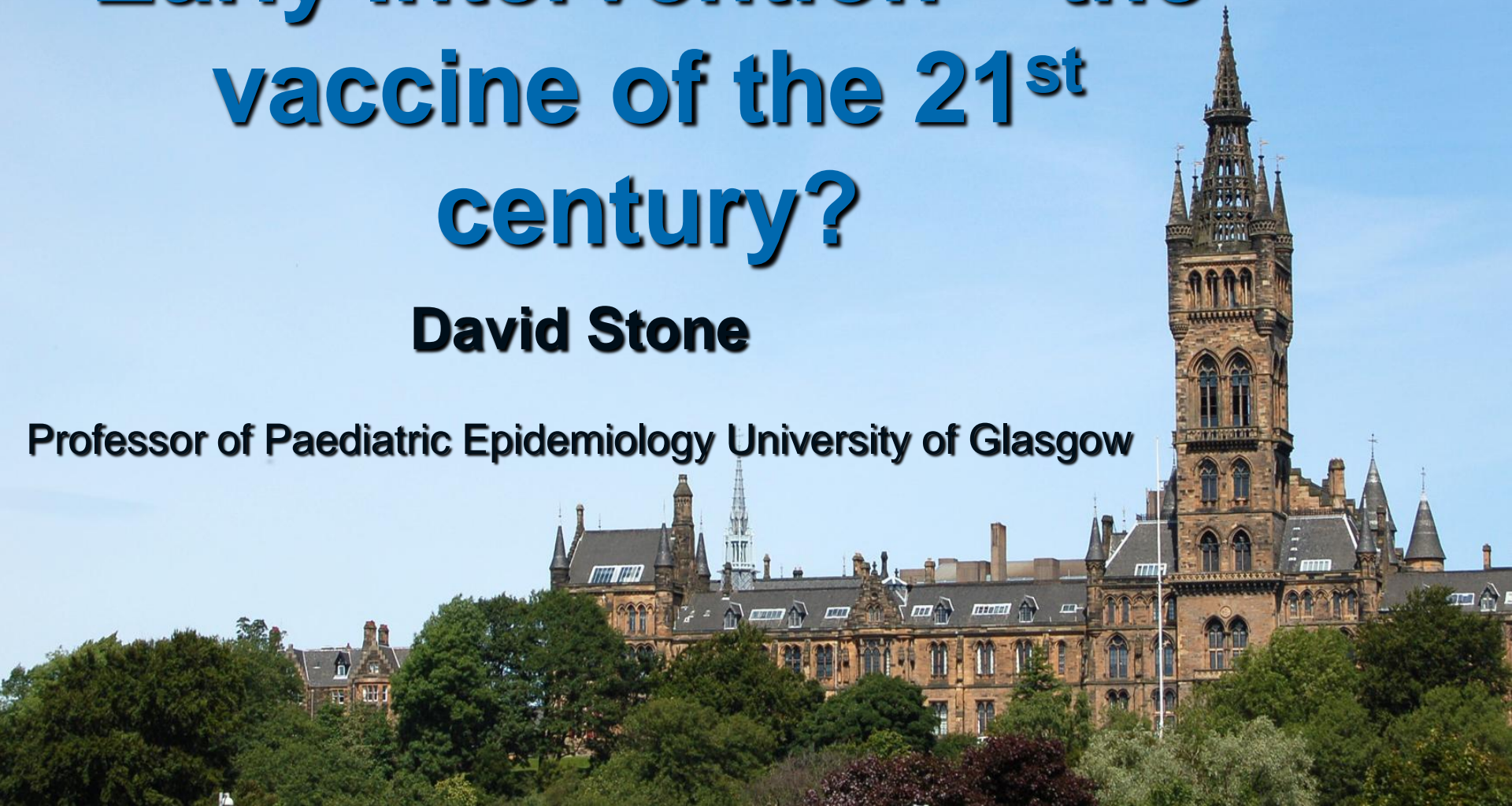


University  
of Glasgow | College of Medical,  
Veterinary & Life Sciences

# Early Intervention – the vaccine of the 21<sup>st</sup> century?

**David Stone**

**Professor of Paediatric Epidemiology University of Glasgow**



# A familiar quotation

*'Give me the child till the age of seven and I will show you the man'*

Attributed to St. Ignatius of Loyola, founder of the Jesuit Order (16<sup>th</sup> Century)



# RESEARCH SUPPPORTS JESUITS

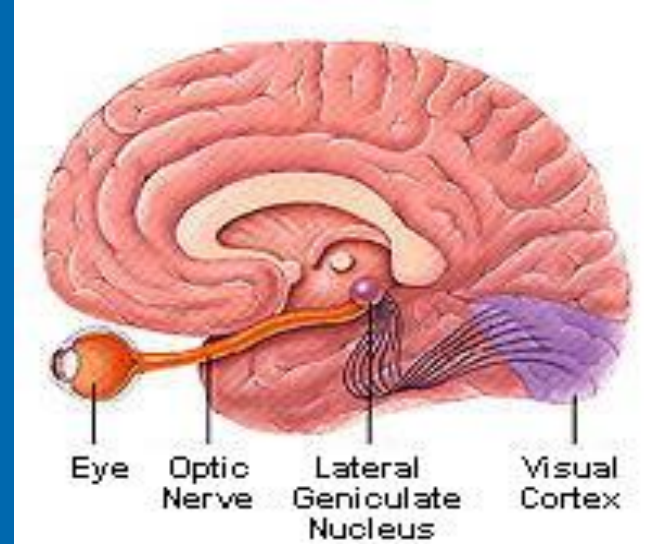
- Early life experience influences later life outcomes
- Early intervention (EI) - especially 0-3 years - can make a difference to later life outcomes
- Parents are key in both causing and preventing poor health and other outcomes

# KEY RESEARCH EVIDENCE COMES FROM

- Neurobiological studies of animal and human brain function
- Epidemiological (cohort, case-control) studies that test “early origins” (Barker, Felitti) and life course (Kuh, Ben-Shlomo et al) hypotheses
- Experiments (esp RCTs) that evaluate impact of interventions



# Critical and sensitive periods



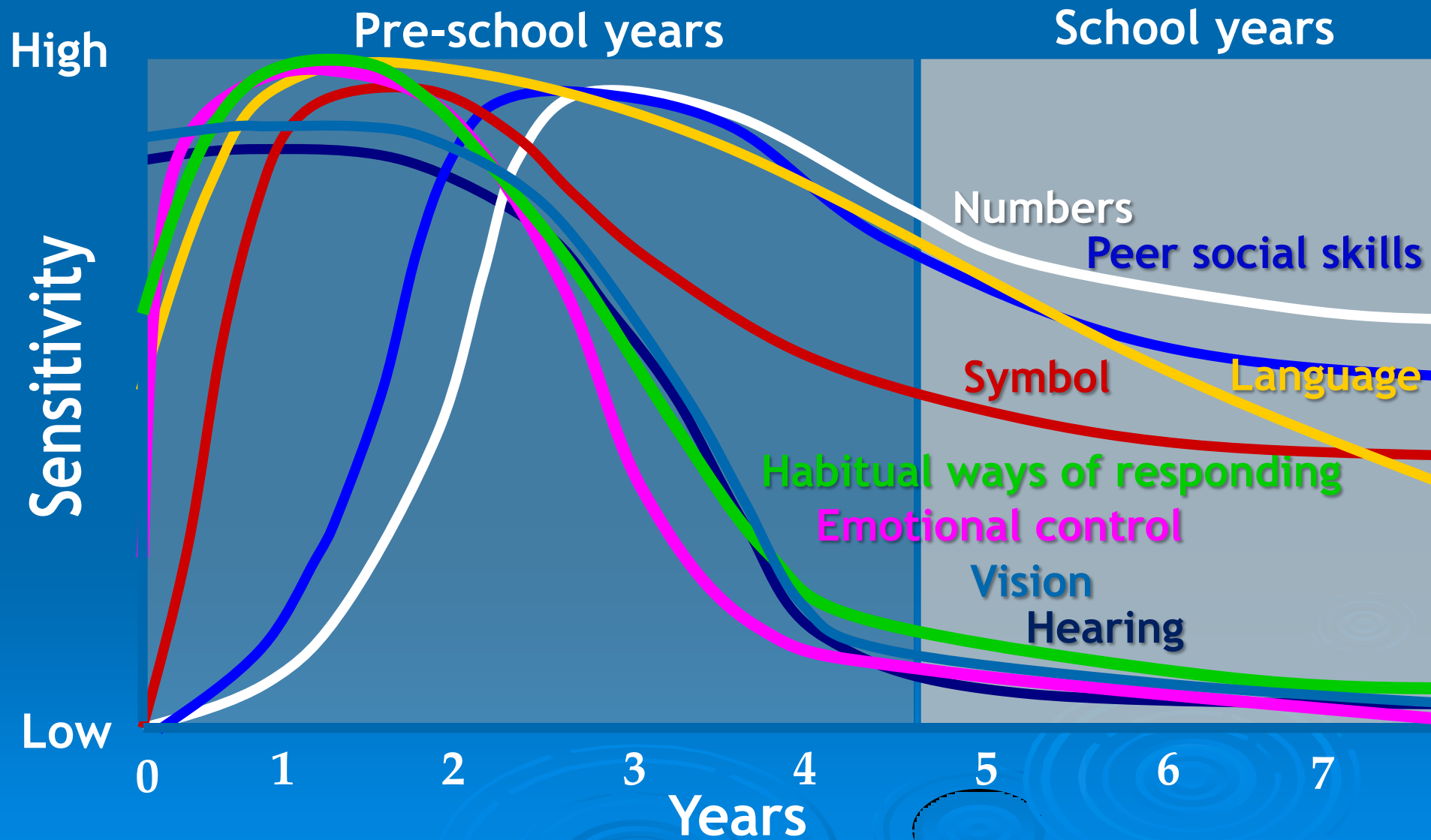
## ➤ The visual system

- Amblyopia - “lazy eye”

- Selective pruning of synapses in the visual system due to lack of ‘through traffic’
- Some damage can be undone by patching
- Children under 4 need less patching than older children - probably pointless beyond age 7-8

## ➤ Is emotional, social and cognitive development like visual development?

# Sensitive Periods in Early Brain Development



# Dysfunctional parenting is bad for children

Dysfunctional parents – whatever their socio-economic status – cause

- unhappiness
- neglect/abuse
- developmental delay
- social impairment
- chronic physical/mental ill health
- death



# High quality parenting is beneficial to children

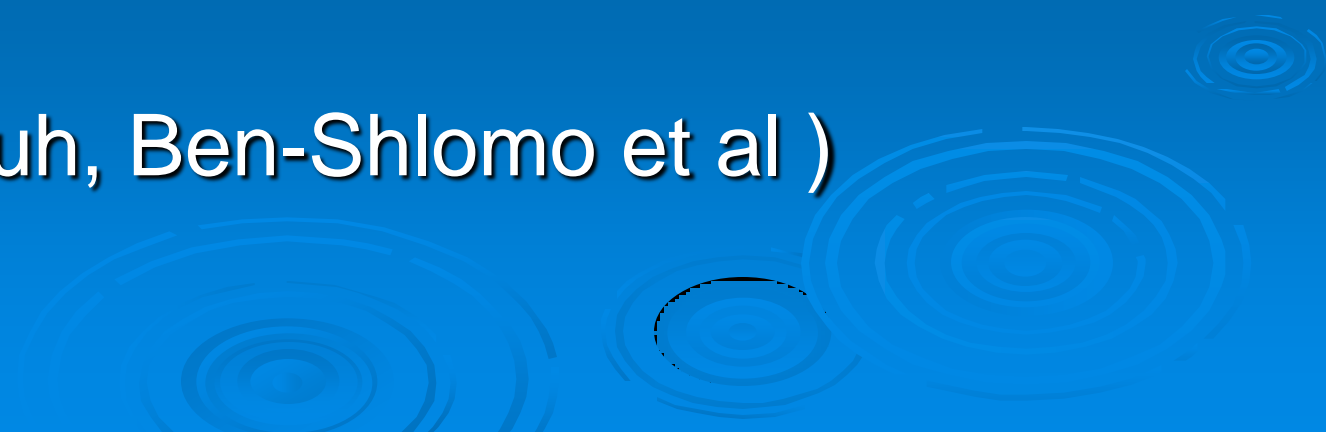


Parents with positive parenting skills promote

- Good physical, psychological and social health
- good educational and employment outcomes
- negotiate crises and obstacles more successfully

# LIFECOURSE INFLUENCES ON HEALTH:

## 3 INTERCONNECTED AETIOLOGICAL HYPOTHESES

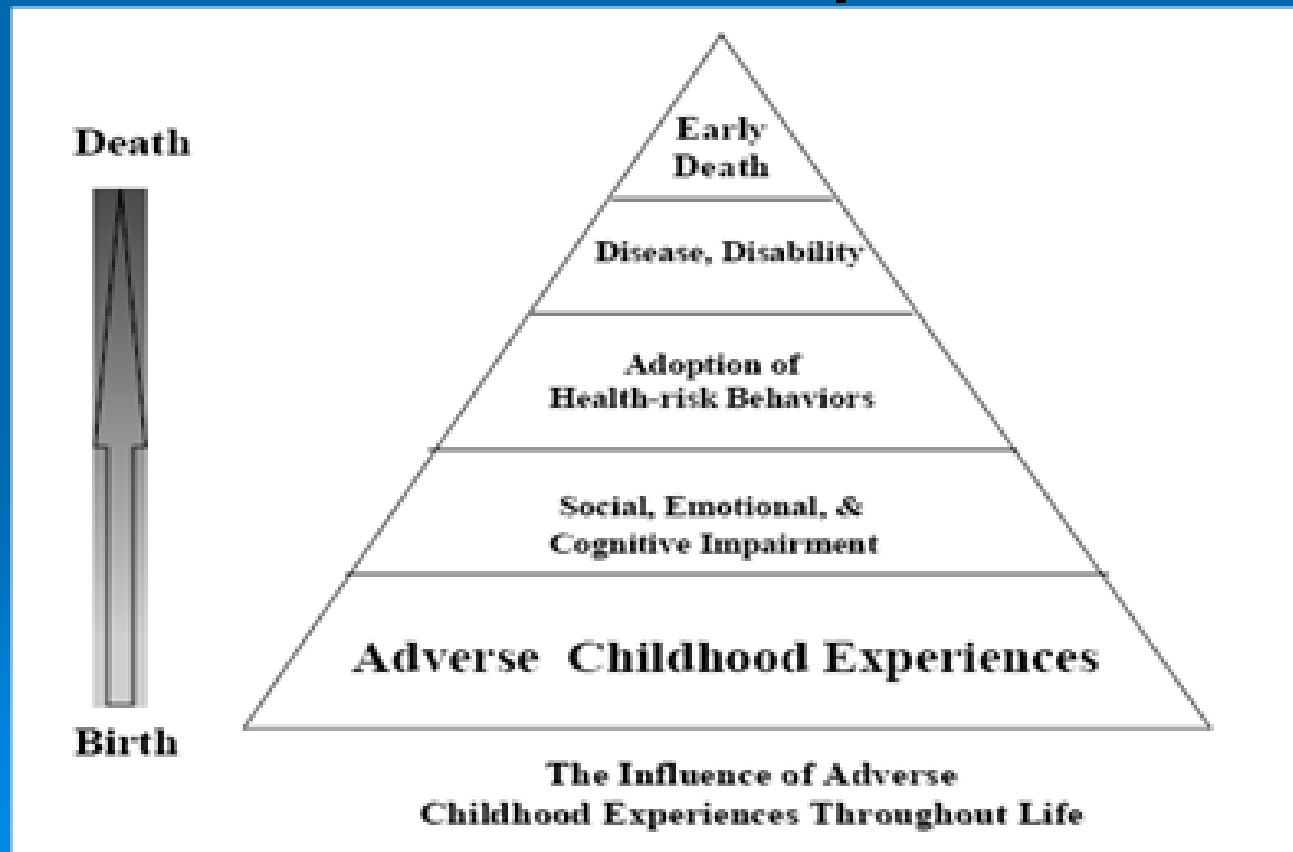
- Biological (Barker et al)
  - Emotional (Felitti et al)
  - Social (Kuh, Ben-Shlomo et al )
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- A decorative graphic in the bottom right corner of the slide, consisting of several concentric circles of varying shades of blue, resembling ripples in water.



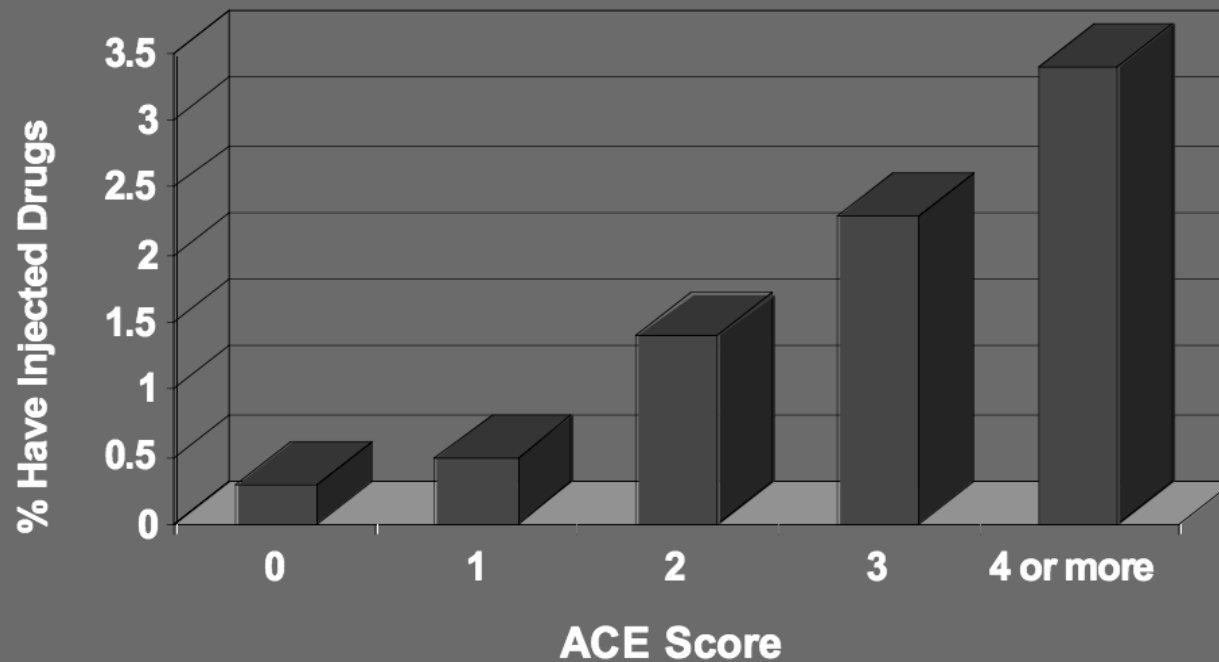
# KEY POINTS ABOUT THE BARKER HYPOTHESIS

- Invokes idea of “programming” in early life for subsequent health and disease
- Focus on intra-uterine nutrition of mother/fetus
- Key association between LBW and CHD (modified by BMI in childhood)
- Compatible with psychological and social models

# The ACE studies link early childhood to adulthood (Source: Felitti 2003)



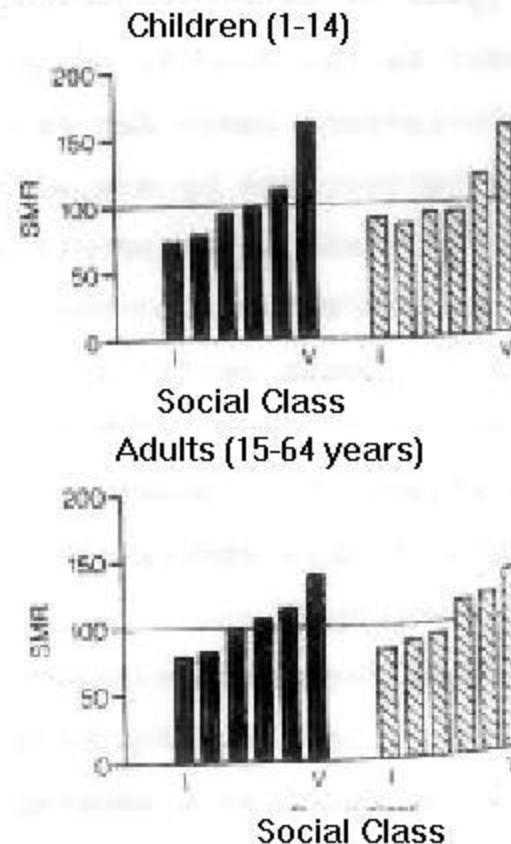
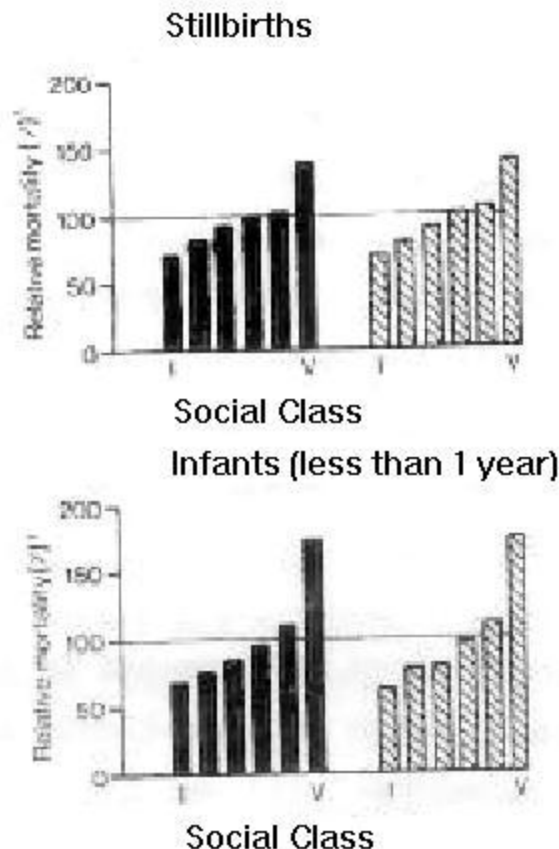
# ACE Score vs Intravenous Drug Use



$p < 0.001$

# Mortality correlates with social class at all ages

(Source: Socialist Health Association commentary on Black Report 1980- using data on Occupational Mortality 1970-72 HMSO 1978)



# Vaccines – public health's greatest triumph (so far)



- Prevent infectious disease by boosting individual and “herd” immunity
- Invented by Jenner 1796 (smallpox) and implemented over in next two centuries
- Given to large groups or whole populations
- Saved millions of lives in past with potential to save millions more
- Many vaccines (e.g. rubella) have reduced disability and suffering



# Practical Benefits of Vaccines



- Quick, painless and cheap to administer
- One or more doses given early in life (to mothers, babies, infants, young children)
- Confers lasting (sometimes life-long) immunity
- Low risk of side effects
- Effectiveness easily demonstrated via RCTs and surveillance

# Vaccines and “vaccines” in public health

- A vaccine is *a biological preparation* that prevents disease by boosting immunity
- A “vaccine” (my metaphor) is *any intervention* that boosts resistance to illness or disability or promotes health and wellbeing
- Both delivered to the population or subgroups



# Is early intervention (EI) a “vaccine”?

- EI has potential, like vaccines, to confer life long benefits
- High quality EI has been shown, like vaccines, to confer such benefits
- Virtually all EI involves parents or carers, plus pre-school programmes
- Infant/child resistance and resilience can be strengthened by the “vaccine” of EI

# What is early intervention (EI)?

“A range of well-tested programmes,\* low in cost, high in results, that can have a lasting impact on all children, especially the most vulnerable”

Graham Allen MP 2011

*Early Intervention: The Next Steps*

An Independent Report to Her Majesty's Government

\*Mainly parenting support, preschool enrichment

# Supporting parents is a key element of EI - evidence

- RCTs of parenting support programmes (e.g. Triple P) have demonstrated efficacy across a range of outcomes in a range of settings
- Programmes are effective whether targeted or universal or both
- Professional case work (clinical, social work etc) provides supportive evidence



# Three notable EI programmes that focus strongly on parenting

- Nurse Family Partnership (Olds)
- Incredible Years (Webster-Stratton)
- Triple P (Sanders)




# Common features to these three EI programmes

- Strong theoretical foundation
- Problem-solving, positive approach
- Public health utility

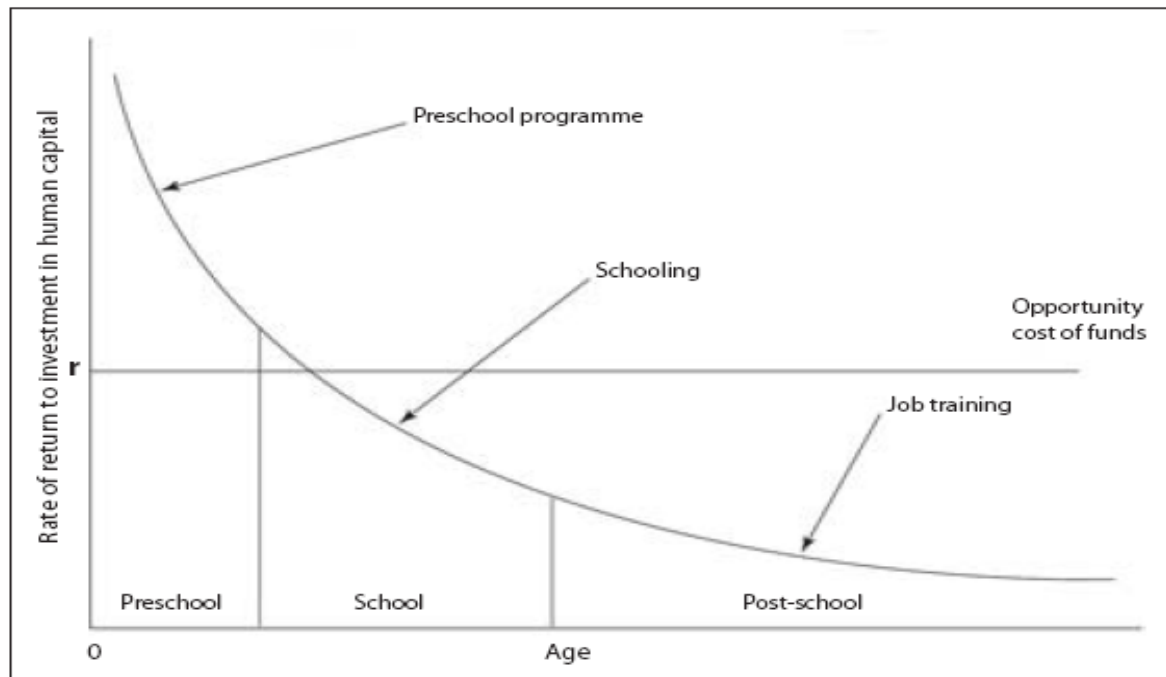


# Early intervention can be delivered to whole population

- Intrinsic part of routine statutory care in many countries
  - Implemented at local, regional, national levels
  - Commands widespread public and political support
  - Sound economic investment
- 

# Heckman Curve (2000)

## Rate of Return



Source : James Heckman


# El includes more than parenting and pre-school programmes

- Preconception and genetic counselling
- Immunisation programmes
- Lifestyle (diet, alcohol, smoking, drugs)
- Creating a healthy and safe environment
- Antipoverty and inequality policies
- High quality health and social care

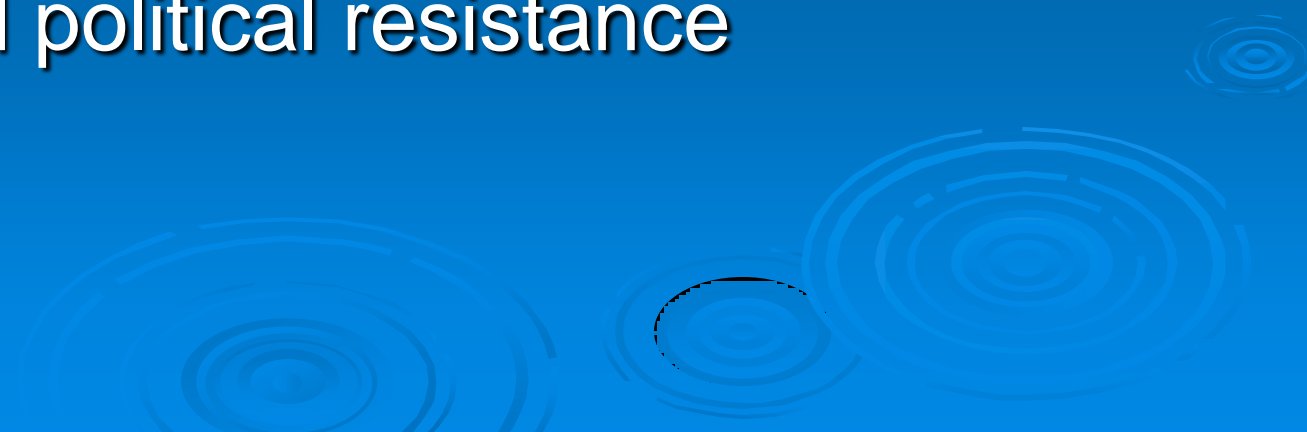


# Does all this mean that EI is the new “vaccine”?

*Not yet.* But it has the potential if the following conditions are met:

- Components of EI are refined and agreed
  - Long term benefits demonstrated and compared to the costs
  - Adverse effects minimised
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# Adverse effects of EI?

- Stigmatisation
  - Non-compliance
  - Increased parental and family anxiety
  - Inappropriate referrals
  - Diversion of resources
  - Media and political resistance
- 



Ian Duncan-Smith  
(Conservative)



Graham Allen  
(Labour)

# Where are we now? Beware the backlash....

BBC

News 21 May 2012

## David Cameron denies parenting classes 'nanny state'



David Cameron: "Parents want help"

- Labour MP: “Smacking ban led to riots because parents fear children will be taken away if they discipline them”
- Tottenham MP David Lammy calls for return to Victorian laws on discipline
- Parents 'no longer sovereign in their own homes'



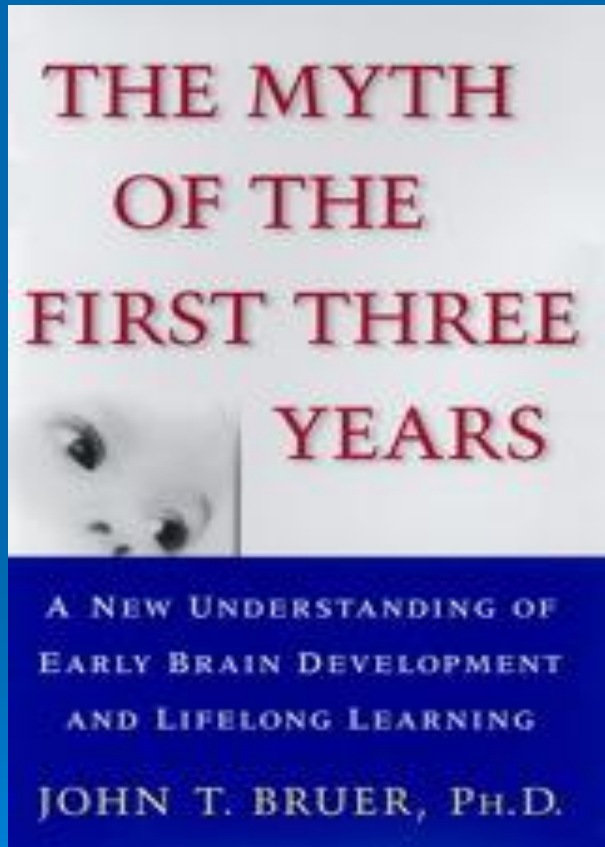
Simon Walters

**UPDATED:**

11:32, 29 January 2012



# The “academic” backlash in US and UK (2010-11)




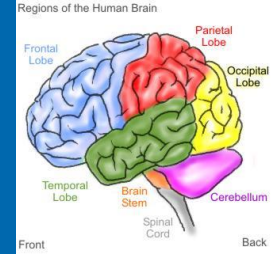
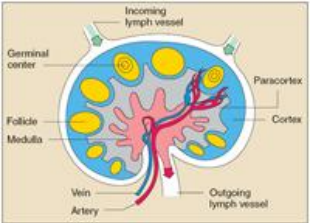
**A Policy Driven By  
Prejudice Masquerading  
As Research**

**Ellie Lee, Director of the Centre  
for Parenting Culture Studies  
(CPCS), University of Kent**



# Summing up

- Poor early life experiences are crucial and can be mitigated by professional intervention
  - Parents and pre-school enrichment are key elements of early intervention
  - Potential impact enormous and long-lasting
  - Benefits likely to outweigh costs
  - Political and scientific opposition mounting
- 



# Is early intervention analogous to a vaccine?


- Biopsychosocial research reveals “immunology” of development – and how to nurture resilience (“antibodies”)
- EI can be an effective upstream measure (“vaccine”) that stops or limits the damage caused by early adversity
- EI can be delivered by statutory agencies to the whole population or high risk groups



# Conclusion

*Early intervention (0-5 yrs) may be the most powerful public health tool (“vaccine”) of the 21<sup>st</sup> century*

*Like vaccines, EI will require decades of R&D with many setbacks and failures on the road to ultimate success*

The background of the slide features several faint, concentric circles in a lighter shade of blue, resembling ripples in water, located in the bottom right quadrant.

David.stone@glasgow.ac.uk

