AREC 345:
Global Poverty and Economic Development
Lecture 13

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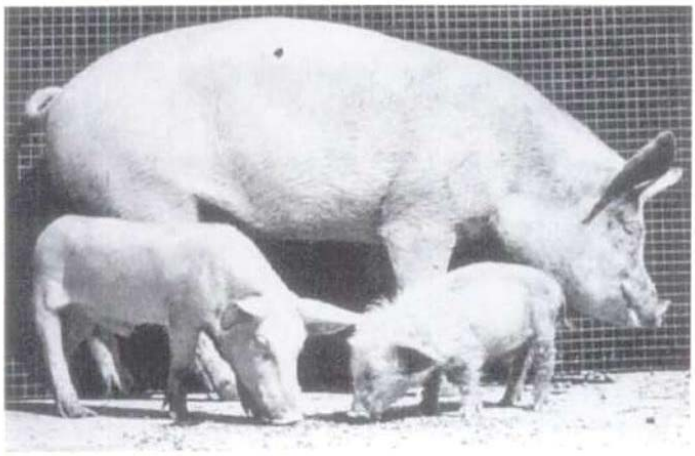
Health: Early Childhood Interventions

Motivation: Critical and Sensitive Periods



Motivation: Critical and Sensitive Periods

Early childhood development is critical

- Drought (and civil war) shocks in Zimbabwe:
  - Children aged 12-24 months lose 1.5-2 cm in height
  - aged 24-60 months experience no permanent effects
- Positive rainfall shocks in Indonesia:
  - 20% higher rainfall caused women to gain 0.57 cm in adult height
  - Also complete 0.22 more grades in school, grow more wealthy
  - Only shocks in the birth year matter
- Jamaica early childhood stimulation at 9-24 months:
  - 25 percent higher earnings — 2 decades later

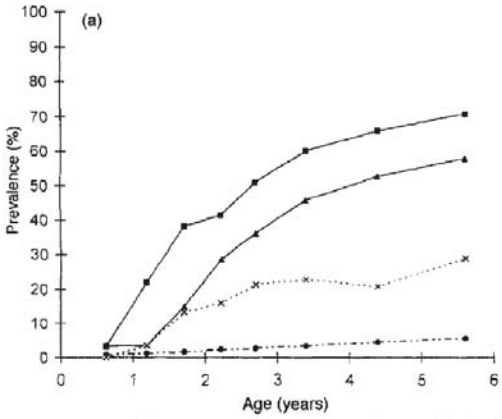
Perhaps the PSDP intervention came too late for some outcomes?

- But wait: **spillovers!**

Research question: did the PSDP have lasting benefits for young children who experienced epidemiological spillovers?

Motivation: Critical and Sensitive Periods

Worm infections take time to accrue:



Age-dependent infection patterns for (a) prevalence of infection (■, any worm; ▲, hookworm; ●, *A. lumbricoides*; ×, *T. trichiura*);

Source: Brooker, et al. (1999)

Data Collection

Can we compare children who were very young at the time of deworming to those who were beyond the critical period?



Cognitive and anthropometric collected in 2009 and 2010:

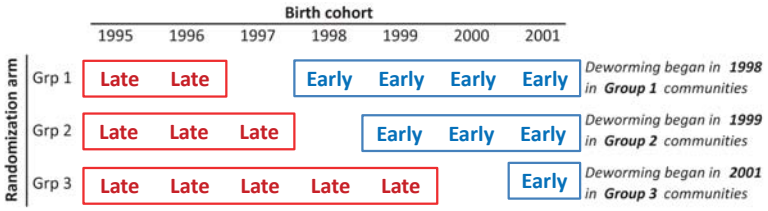
- All participating primary schools
- Height, weight, basic demographics from 20,000 children aged 8–15
- Cognitive measures for roughly 2500 of those children

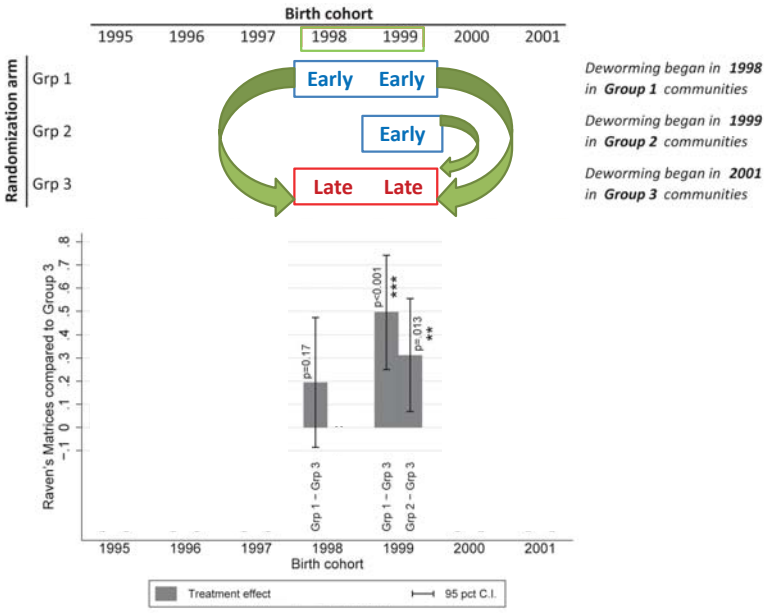
Begin with the original study:

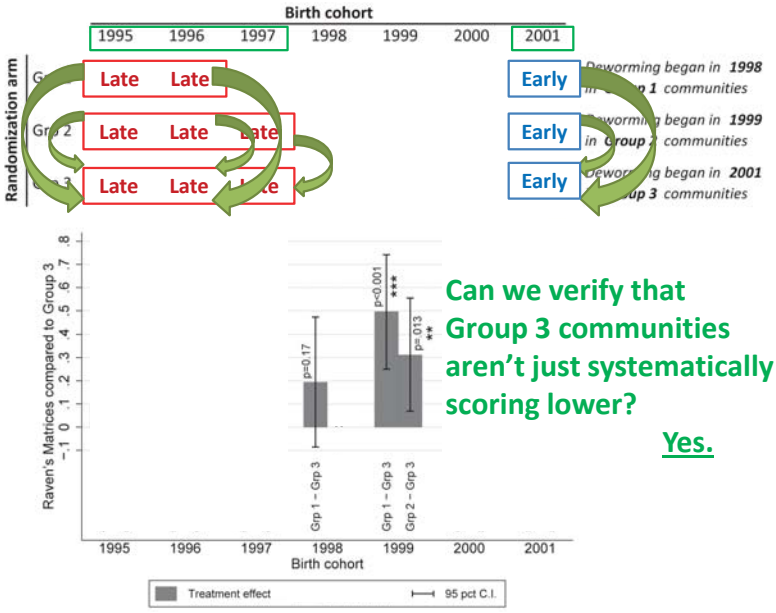
"Group 1" schools begin receive deworming in **1998**

"Group 2" schools begin receive deworming in **1999**

"Group 3" schools begin receive deworming in **2001**







Can we verify that Group 3 communities aren't just systematically scoring lower?

Yes.

Summarizing the Results

Effect observed across a range of cognitive outcomes

- Fluid intelligence measured via Raven's matrices
- Expressive and receptive vocabulary
- Working memory measured via "digit span"

Positive but insignificant effects on child height, likelihood of stunting

Which Groups Benefit the Most?

	Subpopulation						
Outcome:	[1] Full sample	[2] With older siblings[a]	[3] Without older siblings[a]	[4] Female siblings[b]	[5] Male siblings[b]	[6] Female[c]	[7] Male[c]
Raven's Matrices	0.220*** (0.078)	0.423** (0.164)	0.249** (0.118)	0.842*** (0.267)	0.074 (0.199)	0.224** (0.113)	0.214* (0.124)
All cognitive: PC1	0.215** (0.097)	0.396** (0.159)	0.188 (0.132)	0.771*** (0.254)	0.247 (0.237)	0.241** (0.120)	0.187 (0.134)
Observations	2412	541	910	240	228	1129	1283