

Comments on papers presented in:
“Nutrition, Health and Human Capital”

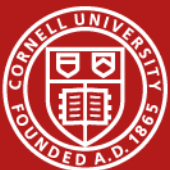
John Hoddinott
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Cornell University
Division of Nutritional Sciences

Nutrition, Health and Human Capital

- Two papers with seemingly radically different objectives and analyses
- Frankenberg/Thomas:
 - Identifying the impact of shocks is challenging because exposure to these can be correlated with other factors that affect both human capital formation and outcomes, including poverty
 - Behavioral responses can mitigate the impact of shocks
 - Short term impacts do not necessarily translate into long term adverse consequences; example is standardized height. “History is not destiny.”
- Dean/Schilbach/Schofield:
 - Overview of dimensions of cognitive function
 - Evidence running from poverty to cognitive function
 - Evidence from cognitive function to economic outcomes
- My view is that there is at least one deep complementarity in these papers, relevant to the broader themes of the conference. My approach is to discuss these papers individually before turning to this and other complementarities.



Frankenberg/Thomas

- Really helpful overview of the literature. I really like the cautionary aspect to this paper; especially the discussion of the short v long(er) run effects
- What I would have liked to have seen more of:
 - More nuanced description of what you mean by expectations and behavioral responses. I think what you are trying to say is that even if an exogenous shock occurs, its impacts will depend on:
 - The ability of households to correctly assess the nature, magnitude, severity and duration of the shock
 - The distributional aspects of these shocks
 - Whether these shocks are one-off or repeated events (and the frequency of the repetition)
 - The ability of households to successfully respond to the shock in the short and longer term
 - The consequences of these responses on all outcomes
 - The role played by public responses
 - And the implication of these for the way economists think about shocks and responses to them
 - Are there other outcomes apart from height that you can examine
 - How long is “long term”



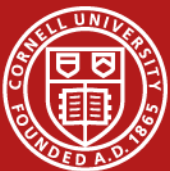
Dean/Schilbach/Schofield

- Terrific overview of the literature. Really like the core idea of becoming more exacting in our understanding of cognitive function
- Aspects that I would like to see more discussion of:
 - How tractable is it to take many of the measures you discuss and apply them to developing country settings? How sensitive are these to culture and setting?
 - What are the magnitudes of the effects that you discuss. Are these meaningful?
 - You look at attention, inhibitory control, memory and executive function. How correlated are these? Outside of experimental studies, can we assess their individual contribution to aspects of poverty?
 - To what extent are these dimensions of cognition transmitted intergenerationally? More generally, what determines these cognitive attributes?
 - Do you think that the *only* way to make progress on these issues is through experimental data



Complementarities (1)

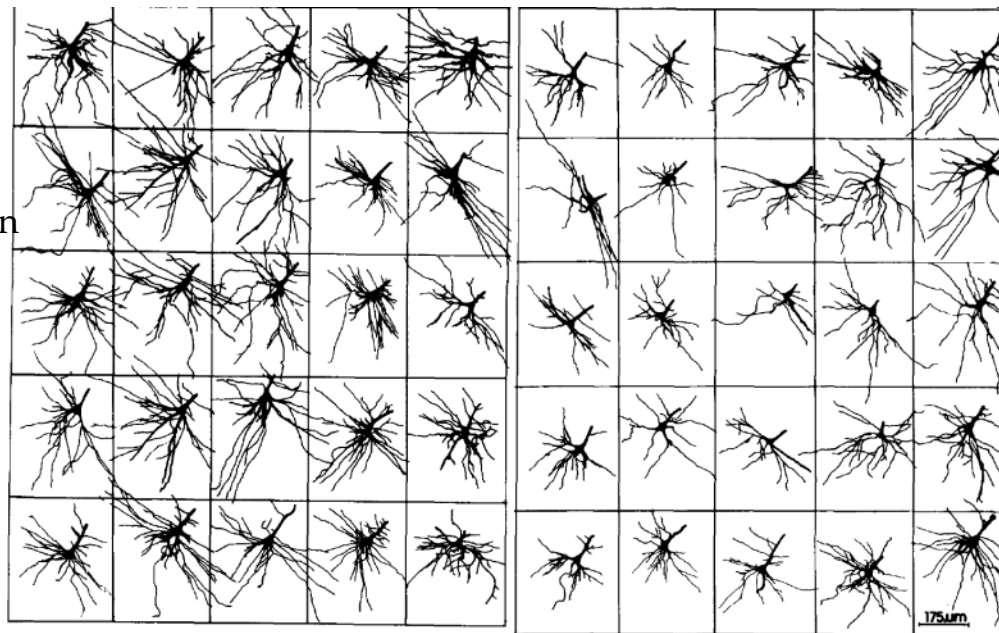
- Immensely helpful overviews of these literatures
- Identification of these effects is challenging
- To make progress on these difficult topics, economists need to “raise their game”
 - Very long term data collection efforts
 - Engage with other disciplines



Complementarities (2)

Motor cortex dendrites in undernourished and well nourished children

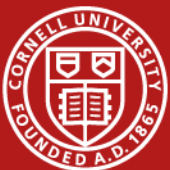
Well nourished children



Undernourished children

Figure 3. Pyramidal cell drawings from (A) well-nourished and (B) malnourished infants. On the left side pyramidal cells from (A) reveal dendritic

Cordero et al,
1993



Consequences of poor anthropometry: Neurological effects of stunting and low HAZ

- Early life malnutrition damages the hippocampus by reducing dentrite density. This adversely affects spatial navigation and memory formation
 - Dendrites are branch like structures, which receive signals sent along axons
- In severely malnourished children, dendrites in the occipital lobe (responsible for the processing of visual information) and in the motor cortex are shorter, having fewer spines and greater numbers of abnormalities; consequently, chronic malnutrition leads to delays in the evolution of locomotor skills
- Malnutrition results in reduced myelination of axon fibers thus reducing the speed at which signals are transmitted
- Early-life undernutrition decreases the number of neurons in the locus coeruleus which plays a role in signalling the need to inhibit the production of cortisol. Thus early-life malnutrition diminishes the ability to exhibit down regulation and handle stressful situations.



Complementarity (2)

- So the deep complementarity I see in these papers is the potential for shocks that lead to chronic undernutrition (Frankenberg/Thomas) to affect neurological development and cognitive function which in turn we believe leads to adverse economic outcomes (Dean/Schilbach/Schofield)
- In turn, suggests that the Frankenberg/Thomas work could benefit from looking at other outcomes in addition to height

And

- Dean/Schilbach/Schofield could look at the early life origins of cognitive function
- And collectively these extensions would help us understand the links from early life health/nutrition to cognitive ability in adulthood and the poverty trap these may create

