

Neighbourhood social capital, neighbourhood deprivation and individual obesity: multilevel path analytic obesogenic model

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Outline

Appealing claim, elusive evidence

Neighbourhood social capital

Extending theory of health production with theory of social interaction

Statistical mechanics of social interactions

WHS and LIW 2007

Obesogenic effect of neighbourhood social capital

Limitations and more fun

Neighbourhood social capital matters for health, or does it?

Elusive evidence of the effects of neighbourhood social capital.

- ▶ US studies tend to support the claim
- ▶ NZ, Sweden, others, studies tend *not* to support.
- ▶ UK studies tend *not* to support.

How do neighbourhood social capital matter?

Mechanisms how neighbourhood social capital improves or harms individual health (Kawachi, Berkman, Marmot).

- ▶ Voluminous social capital or cohesive neighbourhood are better equipped to disseminate information and mobilize collective action.
- ▶ Cohesive neighbourhood, with keen sense of belonging, are better at protecting residents' sense of health.
- ▶ Collective efficacy and informal control, facilitated by networks and trust, beneficial for preventing crime and violence, hence reducing residents' exposure to daily stresses and insults.
- ▶ Cohesive neighbourhood respond better to local and national initiatives that require local involvement.

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Social capital: An essentially contested concept

Woolcock (2010) “its coherence and usefulness rest not on a clear consensus regarding its definition and measurement but on its capacity to draw attention to salient feature of the social world (i.e. the nature and extent of social relations) that are of significance...” Yet as much as possible precise in:

- ▶ definitions and mechanisms
- ▶ theoretical moorings
- ▶ empirical referents

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Grossman health production function extended

- ▶ Grossman health production function: influential but narrowly focused on individual.
- ▶ Health stock evolves: biological depreciation and maintenance of health (m).
- ▶ Subject to time and wealth constraints; optimising individual welfare.

The extension

- ▶ Maintenance/depletion (m) of health is not solely an *individual* decision.

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The extension

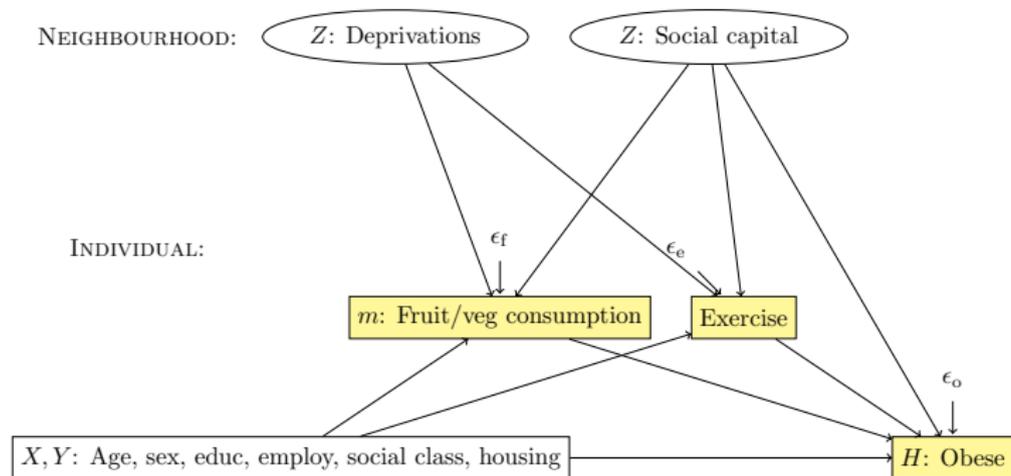
- ▶ Maintenance/depletion (m) of health is not solely an *individual* decision. *Social* interactions matter.
- ▶ Social interactions underpins social capital (networks, norms, trust). No social interaction, no norms, no trust, no networks.
- ▶ Maintenance or depletion is set in social interactions, the materials for the extension or bridge.
- ▶ Bridiging health economics account with public health/social epidemiology accounts.

Grossman health model extended to include neighbourhood social capital

Obesity and the ostensibly individual energy balance

- ▶ Energy balance equation: is it entirely individual?
- ▶ Increased scope of scientific explanation and policy intervention.
- ▶ Converging set of econometric methods for assessing neighbourhood effects.

Extended Grossman model: multilevel path analytic obesogenic (salutogenic) model



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Blume, Brock and Durlauf [BBD] borrow from statistical mechanics to derive equilibrium individuals' behaviours in the presence of social (non-market) interactions. Social interactions are endogeneous with norms and network process in the neighbourhood.

- ▶ Endogeneity paralyses estimation of neighbourhood effects: the identification problem (Manski 1993) in linear-in-means model.
- ▶ Manski, Krauth, BBD point to various solutions incl: non-linear-in-means, lag (spatial and temporal), instrumental variable.
- ▶ Identification with two instruments: ethnic diversity and average length of residence in the neighbourhood.

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Welsh Health Survey 2007 & Living in Wales Survey 2007

- ▶ Cross-sectional surveys.
- ▶ Linked with lower super output area identifier.
- ▶ 1152 neighbourhoods, 13557 respondents.

Variables and instruments

- ▶ BMI.
- ▶ Would you say you trust people in the neighbourhood?
- ▶ What do you like most about living in this neighbourhood?
Belong to this neighbourhood . . . friendships and associations I have with other people in my neighbourhood.
- ▶ Also controlled: sex, age, education, employment, age, wealth (tenure); alcohol consumption and smoking.

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Table of results

Discussions

Neighbourhood social capital can be both beneficial and detrimental.

- ▶ Living in trustworthy neighbourhood [independent of your own trust] can be beneficial for the maintenance of ideal body mass.
- ▶ Living in friendly neighbourhood can be harmful.
- ▶ Christakis & Fowler (2007) find that friendship networks dynamics can also be harmful.
- ▶ Not all social capital are beneficial for health.

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- ▶ Replication with hospital survey data in the Northwest (Salford).
- ▶ No longitudinal setting: BHPS lower super output area.
- ▶ Buffer when buffeted: exogeneous shocks eg ban on smoking in public.
- ▶ Other method of estimation to ensure robust findings: Krauth's simulated maximum likelihood.

Some literature

- ▶ Christakis & Fowler. 2007. The spread of obesity in a large social network over 32 years. *NEJM*. **357** :370-379.
- ▶ Tampubolon. 2012. Neighbourhood social capital and individual mental health. In Maarten van Ham and David Manly. *Neighbourhood Effects Research: New Perspectives*. Springer.
- ▶ Tampubolon, Subramanian & Kawachi. 2012. Neighbourhood social capital and individual self-rated health in Wales. *Health Economics*.
- ▶ Tampubolon, Kawachi & Subramanian. 2011. Neighbourhood social capital, area deprivation and obesity in Wales. Submitted.