



Spatial Economics Research Centre

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City Life Bad for the Brain?

Research looking at brain activity suggests that brains of city dwellers react differently to those of rural inhabitants when people are subject to stress. The findings were quite [widely reported](#), but reading the paper suggests considerable caution in interpreting the results (as the authors, but not all the reporting, points out).

The problem is one that is familiar to social scientists who are interested in the importance of place effects. Let's imagine that you are trying to study an outcome such as the propensity to drop out of school. There is plenty of evidence that individual ability and family background play a major role in drop out. What about neighbourhood? The problem, of course, is that people are not randomly assigned to neighbourhoods. So when you observe high drop out rates in a neighbourhood this may be because of something specific to the neighbourhood, or it may be because of the type of families (and hence children) that live there. In the social science literature, researchers have tried to deal with this problem in a number of ways. Some studies look at very large cross sections with lots of information on individual and family background so that they can try to control for other factors. Studies which follow people over time are usually seen as an improvement on these cross-section studies (because they allow researchers to at least control for factors that are fixed over time). Even better are situations which might be viewed as quasi experiments where something - e.g. bombing in the second world war - has affected neighbourhood composition for reasons that are nothing to do with choices by today's residents. Finally, there is the "gold standard" of randomly assigning people to neighbourhoods - an approach taken by the Moving To Opportunity programme in the US.

The difference between these approaches can matter a lot in practice. In [SERC research](#) on wage differences, controlling for observable characteristics of individuals substantially reduces estimates of the effect on wages of living in big cities. Controlling for unobserved individual characteristics reduces the effects yet further. Taken together, control for individual characteristics explains at least half, if not more, of the difference in wages between UK towns. To take another example, in earlier research looking at obesity and urban sprawl we found that any positive relationship disappeared when we followed a large sample of individuals across time.

Which brings us back to the brains of city dwellers. Because MRI scans are costly to administer, sample sizes in this research are necessarily small - 30 people in the case of this most recent study. This makes it very hard to attribute any observed differences to a causal effect of urbanicity per se, rather than to the sorting of individuals with different characteristics across rural and urban places. It does seem slightly ironic that just as the social sciences have moved towards studying individuals subject to random placement (such as in MTO), neuroscience studies are forced to move in the opposite direction (controlling for observable characteristics in small samples of non-randomly selected individuals).

Posted by [Prof Henry G. Overman](#) on [Wednesday, June 29, 2011](#)

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