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The importance of longitudinal studies for policy and practice

Lucinda Platt

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CLS is an ESRC Resource Centre based at the Institute of Education





- 1. The value of longitudinal and cohort studies
- 2. Early core interests: ethnicity and poverty in longitudinal perspective
 - Some examples
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 - Some examples
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The value of longitudinal sources

- Indicate causal pathways
- Enhance our understanding of the social world.
- Insight into causal processes
- Test interventions or shocks
- Dynamic rather than stable circumstances
- Importance of duration
- Inherently longitudinal phenomena

Focus attention on solutions rather than symptoms...

Dynamic analysis...



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- [...gets us closer to treating causes, where static analysis often leads us towards treating symptoms. ... If, for example, we ask who are the poor today, we are led to questions about the socioeconomic identity of the existing poverty population. Looking to policy, we then typically emphasise income supplementation strategies. The obvious static solution to poverty is to give the poor more money. If instead, we ask what leads people into poverty, we are drawn to events and structures, and our focus shifts to looking for ways to ensure people escape poverty. (Ellwood 1998: 49.)
 - Ellwood, D. (1998). 'Dynamic Policy Making: an Insider's Account of Reforming US Welfare', in L. Leisering and R. Walker (eds), The Dynamics of Modern Society: Policy, Poverty and Welfare. Bristol: The Policy Press, 49–59.



Benefits of longitudinal analysis

Some Approaches

Single transitions over short or long periods or generations

Spell estimates (short / long windows)

Fixed / random effects

Growth models

Provide particular ways of understanding the world and identifying connections and regularities in complex lives. Using influences measured earlier on later outcomes makes causal inference more plausible

Types of data (and dis/advantages)

- Administrative data
 - E.g. Benefit data
 - National Pupil Database (England and Wales)
- Linked census data
 - E.g. The ONS Longitudinal Study
 - The Scottish Longitudinal Study

Panel surveys

- e.g. British Household Panel Study
- Panel Study of Income Dynamics
- Understanding Society
- Cohort studies
 - E.g. Millennium Cohort Study
 - Growing Up in Ireland
 - English Longitudinal Study of Ageing
- And data linkage



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Core interests



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Longitudinal perspectives on:

Poverty Ethnic difference / inequality

Also on: Young people's transitions Public law

Using

Individual admin data Linked Census data Panel studies Cohort studies Aggregate level admin data Survival analysis (exits entrances) Inter- and intra-generational transitions Random effects

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Why poverty and ethnic inequalities?



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Critical insights from longitudinal approaches to poverty that change the understanding of 'the poor'

 and now embedded in understandings of the 'consequences of poverty'

Analysis of events associated with entries and exits also has transformed understanding of other 'states' linked to poverty (e.g. lone parents)

Ethnicity

Differences in ethnic process dynamics can challenge standard accounts of such processes

Ethnic differences often naturalised, but longitudinal approaches can illustrate how they emerge and are sustained

Ethnicity can be considered a longitudinal phenomenon in itself

Ethnic differences in poverty and particularly poverty dynamics was a missing part of the picture – ignored by policy





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Rowntree's lifecourse approach to poverty



Source: Rowntree (1902), p.136



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SOME EXAMPLES...

Children and welfare dynamic

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- **The question:** Do children's durations on means-tested benefits till exit, and durations off benefit till re-entry vary by ethnic group?
- **Background**: Poverty rates differ dramatically across children from different ethnic groups; poverty rates derive from flows
- **Policy relevance?** Context of debates on benefit dependency; meanstested benefit receipt proxy for poverty – long-term worse than short term; but increasing attention to insecurity as a negative experience as well. Moreover children seen as not the authors of their own circumstances. If there are differences across ethnic groups, does that give us any insight into – or places to look for differences?
- Source data: Housing / council tax benefit records from Birmingham
- **Approach:** Estimation of exit and re-entry probabilities using discrete time models, among children in HB/CTB recipient families



Results: exit

Ethnic group (baseline = white UK)	Coefficient (SE)	Hazard ratio (SE)	P-value	
Bangladeshi	18 (.08)	.84 (.07)	.034	
Black Caribbean	.17 (.06)	1.18 (.07)	.007	
Indian	04 (.08)	.96 (.08)	.612	
Pakistani	02 (.05)	.98 (.05)	.655	Source: BCC HB/CTB data; adapted from Platt (2006)



Results: re-entry

Ethnic group (baseline = white UK)	Coefficient (SE)	Hazard ratio (SE)	P-value
Bangladeshi	.40 (.05)	1.49 (.08)	.000
Black Caribbean	.06 (.04)	1.06 (.04)	.150
Indian	.17 (.05)	1.19 (.06)	.001
Pakistani	.30 (.03)	1.35 (.04)	.000

Source: BCC HB/CTB data; adapted from Platt (2006)

Conclusions



Among those on benefit in Birmingham at some point over the period and controlling for basic family circumstances...

- Children in Bangladeshi benefit units are more likely to experience slower moves off AND faster moves back on than the majority
- Children in Black Caribbean benefit units exit faster BUT show now differences in re-entry rates
- Children in Indian and Pakistani benefit units show no differences in exit rates BUT among those who exit, re-entry is faster
- The combination of exit and re-entry rates that comprises the stock varies by ethnic group. Suggests incomes close to the benefit line for Bangladeshis, more cycling among some groups, and that once off there are particular factors which help some groups to stay off.

Policy impact? Not in the short term. But policy relevance re insecurity of different groups – and keeping people out once they exit

Social mobility



- The question: Does social mobility vary with ethnicity? Is social class background more or less important for minority ethnic groups in class outcomes?
- **Policy interest?** Social mobility is one of the big topics and of enduring, crossparty policy interest. Thus generally informative to consider different configurations. Analysis is typically descriptive – assumptions about processes of transmission of advantage. If patterns don't apply or are different across ethnic groups, then challenges assumptions. Education may not produce anticipated returns for minority groups but role in social mobility may still be very pertinent.
- **Source data:** ONS Longitudinal Study (linked 1% census sample from 1971)
- **Approach:** Prospective measurement of intergenerational mobility. Has advantages in general and particular for minority ethnic groups.
- Binary logistic regressions for chances of professional class outcomes; multinomial regressions – for all potential outcomes (including unemployment).

Models of majority LONDON and minority social mobility



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	Prof /Manager	Prof /Manager	Unemployment
			relative to Prof/
			Manager
Caribbean	.306 (.076)***	037 (.081)	.556 (.137)**
Black African	.469 (.246)*	001 (.268)	.0457 (.477)
Indian	.460 (.068)***	.105 (.069)	.062 (.161)
Pakistani	525 (.103)***	792 (.111)***	1.674 (.178)***
Bangladeshi	274 (.245)	465 (.237)*	1.491 (.376)***
White migrant	.318 (.044)***	.142 (.047)**	.052 (.109)
Sample member's			
qualifications (base is			
0)			
Lower (level 1)		1.013 (.027)***	-1.573 (.055)***
Middle (level 2)		1.466 (.027)***	-1.992 (.059)***
Further (level 3+)		2.765 (.028)***	-3.000 (.063)***

Controls for parent's characteristics and resources, area, family status included Source: adapted from Platt 2005; Platt 2007

Conclusions



Substantial upward social mobility for some minority groups

Largely explained by educational attainment

But lower access to the professional managerial classes for Pakistanis despite education; and higher risks of unemployment for Caribbeans – controlling for class background

Class background preserves advantage for some groups more than others

- Suggests retention of class advantage is not unitary but intersects with other aspects of stratification.
- Education is a necessary but not sufficient route to upward mobility (and reestablishment of class position lost through migration?)
- **Policy impact?** Has been cited in a large number of policy documents and government reviews of social mobility. Still one of the few accounts that explores intergenerational mobility by ethnic group.

Gender segregation and children's job aspirations



- **The question:** What factors influence the gender typing of young people's job aspirations?
- **Policy interest?** Occupational segregation is heavily implicated in gender inequality, but debate on how it arises. Measuring occupational choices prior to entry into the labour market may help to understand the supply side factors influencing occupational segregation and those factors associated with less gender-typed choices.
- Source data: British Household Panel Survey Youth Panel 1994-2008
- Approach: Constructed data set of latest measurement of occupational aspiration, averaged key variables across aspirations to increase robustness structure of data inhibited truly longitudinal approach, but followed up subsection of youths who had reached occupational maturity. Linked occupational choices to concentration of women in the contemporary labour market (using LFS), and estimated OLS
 20 regressions.





- Mothers' occupations with typical levels of segregation increases sextyping for girls and similarly for fathers with boys
- A traditional distribution of housework increases sex-typing for boys but no effect for girls
- Self-esteem reduces sex-typing \rightarrow strong effect for girls and boys
- But, when controlling for wages in aspired occupation, is associated with ambition (effect disappears) for girls but not for boys
- General trend towards less sex-typing over time, but will be slow to create an impact.
- Segregated preferences do matter for future labour market outcome: we can follow 1,500 children into their early occupational outcomes. While most do not realize their occupational aspirations, yet the degree of sex-typing of occupational aspirations as children is significantly correlated with the degree occupational segregation as
- **Policy impact?** Potential policy relevance (in relation to boys' selfesteem, and pre-labour market entrenchment of sex-typed preferences) but no policy related interest (as yet – new work)





Birth cohort studies

Special sort of longitudinal study

Allow influence of context to be held constant.

- Can track in detail child outcomes and plot when differences emerge, how they fare over time and the short and long-term implications of family background and upbringing.
- Potential for study of intergenerational mobility in time (e.g. NCDS and BCS70).
- Can address policy questions relating to infancy, childhood and youth etc. in near-contemporaneous fashion

Some (e.g. MCS) additional have oversamples of minority ethnic groups

The Millennium Cohort Study

Over 19,000 children born in the UK between Sept 2000 and January 2002

Follows children throughout their lives.

Four surveys completed at ages 9 months, 3, 5 and 7 years old.

Fifth survey is taking place till end of 2012, when children are in their last year of primary school

Funded by ESRC and UK government departments

One of five British Birth Cohort Studies Oversamples for Scotland, Wales and Northern Ireland, areas with high child poverty and,

in England, areas with higher ethnic minority populations





What data does the MCS collect – and how?



Interviews with both co-resident parents

Child's height & weight from age 3 plus body fat from age 7

Assessments of cognitive ability from age 3

Child self-completion questionnaire from age 7

Consent to data linkage, including school information

How

Home visits,

Interviewer administered CAPI

CASI and paper self-completions

Direct measures of height and weight using standardised protocols

Standardised cognitive assessments adapted for implementation in the home, using standardised protocols;

Linked education data for England and Wales

Linked maternity hospital and birth registration records, hospital statistics to follow



Summary of Instrument Coverage



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	9m	Age 3	Age 5	Age 7	Age 11
Interview (and self-completion) with both resident parents	 Image: A start of the start of	✓	 ✓ 	✓	 ✓
Cognitive assessments		\checkmark	\checkmark	\checkmark	✓
Physical measurements		\checkmark	✓	\checkmark	\checkmark
Child Self-Completion				\checkmark	\checkmark
Older Siblings		\checkmark	✓		
Interviewer Observations		\checkmark	\checkmark	\checkmark	\checkmark
Teacher Survey			\checkmark	\checkmark	\checkmark

Summary of content coverage



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- Parent health & mental health Child health
- Parenting
- Child care
- Child behaviour
- Child activities
- Child education and schooling
- Parental education, employment & employment history
- Parental income and material deprivation

Parents' relationship, and main parent relationship history Parent social networks and neighbourhood Housing and mobility Child friendships Child cognitive ability Child special educational needs Child growth and BMI

Policy relevant potential



Wide interest in study (and study findings) from policy and practitioner community: salient topic and life stage Findings sought by policy makers and practitioners e.g. (very recent examples)

- Flying Start Cardiff: child psychologists and child care practitioners and parenting practitioners
- Parenting UK annual conference, voluntary sector organisation with representation practitioners and policy makers concerned with children's strategies
- Research report commissioned by Department for Education
- Monitoring for Equality and Human Rights Commission:
- 27 Equality Measurement Framework



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SOME EXAMPLES OF POLICY RELEVANT RESEARCH FROM MCS...

Early experience and child outcomes



Early outcomes and longer term outcomes

e.g.

- Breast feeding and
- (early) hospitalisation;
- (later) behaviour and cognitive outcomes.
- Parenting and child cognitive outcomes at different ages.
- Early and persistent impact of social disadvantage for school outcomes as well as cognitive assessments.
- Child care: different picture for type of child care, and for outcomes considered.
- Growth overweight of children and family factors associated with it

Research example: breast feeding and early hospitalisation



A study based on the age nine months MCS data showed that breastfeeding protects against hospitalisation for diarrhoea and lower respiratory tract infection. It estimated that exclusive breastfeeding could prevent 27 per cent of hospitalisations for lower respiratory tract infections and 53 per cent of serious diarrhoea cases. The evidence was referenced in NICE guidelines and has been used by Unicef breastfeeding promotion

Quigley, M. A., Kelly, Y. J. and Sacker, A. (2007) "Breastfeeding and hospitalization for diarrheal and respiratory infection in the United Kingdom Millennium Cohort Study", Pediatrics, Vol. 119 No.4

Other studies have indicated that breast-feeding may protect against developmental delay and be associated with later positive behavioural and cognitive outcomes.

Parenting and child outcomes



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Focus on understanding the routes to child disadvantage, i.e.

- Does parenting matter for child outcomes?
- How does it relate to or 'explain' other influences on child outcomes
- Does it matter as much as, more than socio-economic disadvantage?

Parenting and cognitive and behavioural outcomes

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- Kiernan and Huerta (2008) looked at cognitive and behavioural outcomes at age 3 and the extent to which economic and maternal depression associations with these were mediated by parenting practices.
- 3 outcome measures: cognitive ability (school readiness), conduct problems, emotional problems (externalising and internalising from SDQ).
- Three potential parenting routes: reading activities, mother-child relations, and disciplinary practice
- Income effects on cognitive development substantially mediated through parenting practices, though direct effect remained. Income also associated with maternal depression and thereby behavioural problems
- Substantial direct effect of maternal depression on behavioural problems, though also part of the effect mediated by parenting practices.

"economic deprivation and maternal depression separately and collectively diminish the cognitive and emotional well-being of children, and part of this diminution emanates from less nurturing and engaged parenting by those with less economic and emotional resources"



Child growth and overweight

- High rates of child overweight substantial increase at end of 20th and into early years of 21st Century.
- When and how does it emerge and change over time?
- Interest in what factors contribute to child overweight and to sustaining it.
- Research from MCS has fed into obesity strategies in Wales, and overweight has e.g. been subject of a Scottish Government Report

Risk factors for child overweight up to age 7



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Research by Connelly showed that childhood overweight at age 3 was more prevalent among those childen: of Black ethnicity; who had started solid foods early; with lone mothers; with mothers who smoked during pregnancy; whose parents were overweight and whose mother was overweight prior to the pregnancy; where the mother worked for more than twenty-one hours per week; and where they had breast fed for less than four months.

Factors associated with obesity at age five were low levels of parental education, weaning before age three months, as well as Asian or African ethnicity.

At age 7, children were more likely to be overweight if they were: of Pakistani and Bangladeshi and Black ethnicity; of greater birth weight, with parents with no educational qualifications compared to those with a degree; whose parents were overweight and whose mothers were overweight before pregnancy; and whose mothers were smokers. Longer working hours were also associated with overweight and obesity at age seven.

At age 7, therefore factors largely similar to those at younger ages, but they show the persistence and may help to identify risk factors.

Connelly, R. (2011) *Drivers of Unhealthy Weight in Childhood: Analysis of The Millennium Cohort Study*. Scottish Government Social Research.

Family poverty / disadvantage

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Questions about

- How early do differences in child outcomes (including cognitive outcomes) emerge?
- Do they persist or change (grow / decrease) over time?
- Does it matter whether poverty / disadvantage occurs at a particular time or is long-term?

Research example: persistent child poverty and outcomes



- A paper by Andy Dickerson and Gurleen Popli, looked at whether the children were in poverty at ages 9 months, 3 years, 5 years and 7 years; and the effect of poverty on the children's scores on several cognitive assessments taken at ages 3, 5 and 7.
- They found that poverty especially persistent poverty has a greater impact on cognitive development than factors such as whether or not parents read to their children, take them to the library, or help them with reading, writing and maths. Being poor can also adversely affect parents' ability to take an active role in their children's learning, which further affects their scores.
- Across early childhood, persistent poverty is worse for children's cognitive development than intermittent poverty. For children who had been poor at only one point since birth, it was being born into poverty that had the most detrimental effects on cognitive development, whereas recent episodes of poverty had the least impact.

Dickerson, A. and Popli, G. (2012) Persistent poverty and children's cognitive development: Evidence from the UK Millennium Cohort Study



Other research on the topic of the relative contribution to child outcomes of parenting and poverty:

Commissioned for Frank Field Report on the Early Years Commissioned by Northern Ireland Executive

cited in policy documents relating to child poverty

Ethnicity and poverty persistence



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Source: MCS Waves 1-4, estimates adjusted for design effects and non-response, own analysis

Modelling poverty transitions at first two sweeps



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To complement analysis of cross-sectional poverty rates and correlates across ethnic groups in report to DWP

Probit regressions of

- probability of entry and exit
- analysis of contribution of events to transitions (following Bane and Ellwood)
- Controls: work status of parents, 3+ adults, 3+children, lone or couple parents, age of mother (and square), disabled parent, housing tenure, region

Found that:

- The groups with highest proportions of poverty have lower exit rates, higher entry rates and greater persistence, even controlling for key poverty-related 'risk' factors.
- Apparent dominance of demographic over employment-related events for transitions.
- Apparently favourable trigger events are not equally positive for all groups in terms of avoiding poverty
- Individual moves into work, where a lot of emphasis has been paid, does not appear in itself sufficient as a key way to avoid poverty for those most at risk.

Predicted probabilities of exit, by ethnic group







Source: MCS Waves 1-2, estimates adjusted for design effects and non-response, own analysis

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Predicted probabilities of entry, by ethnic group







Source: MCS Waves 1-2, estimates adjusted for design effects and non-response, own analysis

Predicted probabilities of persistently poor by ethnic group

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Source: MCS Waves 1-, estimates adjusted for design effects and non-response, own analysis



Cohort studies and policy

impact

SO MCS – and birth / child cohort studies have enormous potential to speak to policy concerns and enhance understanding of salient issues.
 Seem well-placed to make an impact, and looks like much has come out of MCS (and other cohort studies) has had an impact on policy and practice.

But is this truly the case?

But how can the studies ensure that they are used in ways that matter make a difference?

What is impact?



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Impact is: 'the demonstrable impact that excellent research makes to society and the economy' (RCUK)

Has to be demonstrable; has to be good quality; and can take three forms:

- A) Instrumental
- B) Conceptual
- C) Capacity building

A and B focus on 'policy'

Cohort studies and impact



Clearly data itself can't produce impact Impact necessarily indirect

We can

collect data that is potentially 'impactful' – but what does this exclude? foster use of the data

help to increase awareness of particular uses

carry out research that speaks to relevant or topical policy concerns

We can't

ensure that research using resources (and that is noticed) is high quality (in fact incentive to promote regardless) ensure that research is taken up guard against misinterpretation

⁴⁵ predict the long-term impact of less 'popular' research

Timing, intention and use of 'evidence' can complicate



Long-term effects (e.g. social mobility findings from early birth cohort – current research but 'old' data)

- Things come in and out of policy focus (think for example of the well being agenda, or identity agenda) can't necessarily 'keep up' or wind down may be / need to be ahead of the game, but that will be hard to demonstrate as 'impact'
- How to know if a particular study or finding has made a difference? Policy documents for impact develop their use of 'evidence' through reviews and slow establishment of received wisdom.
- Commissioned research can often be underpinned by a particular agenda that may not be fully reflected in data.
- Media attention is not impact in itself, and may not be proportionate to the significance of the findings but may be relevant for how concepts or ideas command currency, and what comes into focus over time, nevertheless.
- Need to engage with where policy makers are at now to command credibility, but also have to push the boundaries, be prepared to question findings



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BUT STILL ENORMOUS FUTURE POTENTIAL...

Looking ahead



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The age 11 sweep

Currently in the field

- Many continuities, but some new aspects given age of child Longer child self-completion
- New, neuropsychological assessments

covers e.g.

- Prospective move to secondary school
- Anti-social behaviour
- Autonomy and independence
- Perceived well-being
- Pubertal development

The age 14 sweep (2015)

Will capture important stage from early secondary school to where major educational (and potentially life) decisions are made. Important areas to cover will be Risky behaviours, Aspirations Friendships Activity (and changes in activity) Time use Educational attainment (through linked data as before)

IT use

Potential of age 11-14 years



Emergence of risky and antisocial behaviours

- How these relate to physical development (e.g. onset of puberty)
- Transition to autonomy, timing, variation
- Girls and boys growing into youth and out of childhood changes and continuities in patterns of behaviour, growth etc.
- Future aspirations education, occupation, family and change development across adolescence
- What experiences 'matter' (for which outcomes)
- Role of friendships and peer groups in shaping experiences
- Relationship between cognitive functioning and school performance and how this plays out over secondary school period
- Family background at different stages and its influence
- Family structure and parental separation in the teenage years links to earlier circumstances
- Rersistence of early effects?





The MCS into adulthood...

Childhood sweeps will lay an incredibly detailed context for understanding long term trajectories and outcomes, as well as being fruitful (and continuing to provide new evidence) about the early years themselves.

What happens at young ages and resilience to negative impacts can be have long term consequences as we can see – and as we see for the first time in this detail.



Reflections and conclusions

- Longitudinal studies are an essential source for understanding the complexities and regularities of social experience
- A focus on short and long term dynamics challenges static narratives and creates new questions for investigation
- This is essential for well-informed policy and for practitioners who want to make appropriate interventions
- But they are complex to analyse and often rewards are long-term difficulty of translating, particularly contemporaneously, into specific policies or policy recommendations
- A focus on key, stated, policy interests may increase reach and measureable impact but in the gaps and what is neglected that may offer the greatest new insights.





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