Growing Up in Australia: The Longitudinal Study of Australian Children - learnings about ECEC

Ben Edwards
2014
Study overview

- First nationally representative birth cohort study
- Measures all aspects of children’s development and environment
- 10,000 families recruited in 2004
  - B cohort - aged 0-1 years
  - K cohort - aged 4-5 years
Study overview

- Wave 5 fieldwork completed Feb 2013
- Wave 6 fieldwork commenced May 2014
  - B cohort now aged 10-11 years
  - K cohort now aged 14-15 years
- Wave 7 is currently under development (fieldwork in 2016)
- Ongoing study
Who’s doing it?

- Jointly managed and conducted by 3 government agencies:
  - Australian Government Department of Social Services
  - Australian Institute of Family Studies
  - Australian Bureau of Statistics

- Advice from a consortium of academics and researchers
Background
Why do it?

- To provide major evidence base for policy initiatives aimed at improving support for children and their families, including prevention and early intervention strategies

- Awareness of importance of the early years for later outcomes
  - “New morbidities”, e.g. asthma, obesity, anxiety, depression, etc.
  - Changes in family life: non-parental childcare, mothers return to work, relationship breakdown, increased use of technology
  - Understand contexts of development and developmental trajectories that can not be understood in ‘one off’ studies.
Conceptual framework

Bronfenbrenner: ecological theory of child development

plus

Set of “Key Research Questions”
(under revision)

The broad research questions cover:

- How well are Australian children doing on a number of key developmental outcomes?

- What are the child, family and community factors that are related to different child outcomes?

- What helps maintain an effective pathway or change one that is not promising?
Study design

- Cross sequential design

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
<th>Wave 5</th>
<th>Wave 6</th>
<th>Wave 7</th>
<th>Wave 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant (B)</td>
<td>0–1 years</td>
<td>2–3 years</td>
<td>4–5 years</td>
<td>6–7 years</td>
<td>8–9 years</td>
<td>10–11 years</td>
<td>12–13 years</td>
<td>14–15 years</td>
</tr>
<tr>
<td>Child (K)</td>
<td>4–5 years</td>
<td>6–7 years</td>
<td>8–9 years</td>
<td>10–11 years</td>
<td>12–13 years</td>
<td>14–15 years</td>
<td>16–17 years</td>
<td>18–19 years</td>
</tr>
</tbody>
</table>

Growing up in Australia

Australian Institute of Family Studies

Australian Government
Study informants

- **Study Child**
- **Parent 1**
  - Person in family who knows most about child, usually biological mother
- **Parent 2**
  - Childs other resident parent/guardian, or resident partner of Parent 1
Study informants

- Parent living elsewhere
  - Usually child's other biological parent who no longer lives with Parent 1
- Child's teacher (previously child carer)
- Interviewer
- Linked data
  - Medicare; National literacy and numeracy assessment; National childcare accreditation; Census data; School test score averages and school characteristics
Overall response

MAIN WAVE

- 10,090 families in Wave 1
- 9,070 families in Wave 2 (90% of W1)
- 8,718 families in Wave 3 (86% of W1)
- 8,405 families in Wave 4 (83% of W1)
- 8,000 families in Wave 5 (79% of W1)
# Parent 1 – K Cohort

<table>
<thead>
<tr>
<th></th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
<th>Wave 5</th>
<th>Wave 6</th>
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</thead>
<tbody>
<tr>
<td><strong>TELEPHONE INTERVIEW</strong></td>
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<td>Computer assisted</td>
<td>Computer assisted</td>
<td>Computer assisted</td>
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<tr>
<td><strong>PERSONAL INTERVIEW</strong></td>
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<tr>
<td></td>
<td>Pen and paper</td>
<td>Computer assisted</td>
<td>Computer assisted</td>
<td>Computer assisted</td>
<td>Computer assisted</td>
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</tr>
<tr>
<td><strong>SELF-COMPLETE IN HOME</strong></td>
<td>2-3 page</td>
<td>4 page</td>
<td></td>
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<td>Computer assisted</td>
<td>Computer assisted</td>
<td>Computer assisted</td>
<td>Computer assisted</td>
</tr>
<tr>
<td><strong>SELF-COMPLETE LEAVE BEHIND</strong></td>
<td>12-page</td>
<td>12-page</td>
<td>12-page</td>
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<tr>
<td><strong>LIGHT TIME USE DIARIES</strong></td>
<td>2@24-hour</td>
<td>2@24-hour</td>
<td>2@24-hour</td>
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</tr>
<tr>
<td><strong>TOTAL TIME IN HOME</strong></td>
<td>120 minutes</td>
<td>75 minutes</td>
<td>95 minutes</td>
<td>90 minutes</td>
<td>90 minutes</td>
<td>90 minutes</td>
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</tbody>
</table>
## Child assessments

<table>
<thead>
<tr>
<th></th>
<th>0-1 years</th>
<th>2-3 years</th>
<th>4-5 years</th>
<th>6-7 years</th>
<th>8-9 years</th>
<th>10-11 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICAL MEASURES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head circumf., weight</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height, weight, girth</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Body fat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y (B only)</td>
<td></td>
</tr>
<tr>
<td>Blood pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>COGNITIVE MEASURES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who am I?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Abridged PPVT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>WISC Matrix Reasoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>INTERVIEW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>Y ACASI</td>
</tr>
<tr>
<td>TIME DIARY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>TOTAL TIME (approx)</td>
<td>5 mins</td>
<td>10 mins</td>
<td>30 mins</td>
<td>30 mins</td>
<td>35 mins</td>
<td>60 mins</td>
</tr>
</tbody>
</table>
Parent 2, PLE & Teacher – K Cohort

- Parent 2: Self complete paper form

- Parent Living Elsewhere
  - Wave 1: No interview
  - Wave 2: Self complete paper form to mail back
  - Waves 3-6: Computer assisted telephone interview

- Teacher: Self complete paper form
Some recent research highlights from Growing Up In Australia
Highlights of some relevant research

- Impact of preschool (Warren & DeNew, 2014)
- Role of structural features - teacher qualifications (Warren & DeNew, 2014)
- Role of process – childcare quality
  (Gialamas, Mittinty, Sawyer, Zubrick & Lynch, 2013; Gialamas, Sawyer, Mittinty, Zubrick, Sawyer, & Lynch, in press)
Early Bird Catches the Worm: The Causal Impact of Pre-school Participation and Teacher Qualifications on Year 3 NAPLAN Cognitive Tests

Diana Warren, Australian Institute of Family Studies
and John Haisken deNew, Melbourne Institute of Applied Economic and Social Research

Funding for this research is gratefully acknowledged by the research partnership between the Melbourne Institute of Applied Economic and Social Research and the Victorian Department of Education and Early Childhood Development (DEECD). This paper uses unit record data from the Longitudinal Study of Australian Children (LSAC) Survey. The LSAC project was initiated and is funded by the Australian Government Department of FaHCSIA and is managed by the Australian Institute of Family Studies (AIFS). The findings and views reported in this paper, however, are those of the authors and should not be attributed to either FaHCSIA or AIFS.
Related Literature

- Significant short and long term benefits from targeted, high quality pre-school programs (Schweinhart et al., 2005; Campbell and Ramey, 1995; Deming, 2009)
- Larger scale programs have weaker effects than targeted (Barnett, 1998; Dumas and Lefranc, 2010)
- Mixed evidence about the long-term effects of typical pre-school programs
- No conclusive evidence that a pre-school teacher with a Bachelor degree will ensure better cognitive outcomes (Early et. al, 2007)
The Impact of Pre-school on Year 3 NAPLAN Outcomes

Research Questions:

- How does attendance at pre-school in the year prior to formal schooling affect NAPLAN Scores in Year 3?
- Do the benefits from pre-school differ according to the qualification teachers?

Contribution: This is the first study for Australia to examine the causal effects of pre-school attendance and pre-school teacher qualifications on NAPLAN outcomes.
NAPLAN Bands

Figure 1: National Assessment Program (NAP) Scale

<table>
<thead>
<tr>
<th>Scaled Score</th>
<th>Band</th>
<th>Year 3</th>
<th>Year 5</th>
<th>Year 7</th>
<th>Year 9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Band 10</td>
<td></td>
<td></td>
<td></td>
<td>680</td>
</tr>
<tr>
<td></td>
<td>Band 9</td>
<td></td>
<td></td>
<td></td>
<td>634</td>
</tr>
<tr>
<td></td>
<td>Band 8</td>
<td></td>
<td></td>
<td></td>
<td>582</td>
</tr>
<tr>
<td></td>
<td>Band 7</td>
<td></td>
<td></td>
<td></td>
<td>530</td>
</tr>
<tr>
<td></td>
<td>Band 6</td>
<td></td>
<td></td>
<td></td>
<td>478</td>
</tr>
<tr>
<td></td>
<td>Band 5</td>
<td></td>
<td></td>
<td></td>
<td>426</td>
</tr>
<tr>
<td></td>
<td>Band 4</td>
<td></td>
<td></td>
<td></td>
<td>374</td>
</tr>
<tr>
<td></td>
<td>Band 3</td>
<td></td>
<td></td>
<td></td>
<td>322</td>
</tr>
<tr>
<td></td>
<td>Band 2</td>
<td></td>
<td></td>
<td></td>
<td>270</td>
</tr>
</tbody>
</table>

Source: VCAA (2010)
Estimating the Effects of Pre-school Attendance

- OLS estimates: Average effect of pre-school participation on NAPLAN scores

- Explanatory variables:
  - **Characteristics of the child**: gender, age, ATSI Status, birth weight, health
  - **Characteristics of the household**: household size, household income, resident siblings, lone parent household, language other than English
  - **Characteristics of the mother**: education level, age, employment status
  - **Regional characteristics**: state of residence, metropolitan area

- To control for the ability level of the child in 2004, models are re-estimated with the “Who am I” score
Causal Estimates of Pre-school Participation

- Propensity Score Matching can provide causal estimates, assumes that Tx assignment and outcome don’t depend on unobservable characteristics.
- Average effect of Treatment on Treated (ATT): The benefit from pre-school attendance for those who attended
- Average effect of Treatment on Untreated (ATU): How much higher the NAPLAN scores of children who did not go to preschool might have been, if they had attended

<table>
<thead>
<tr>
<th></th>
<th>Without Control for Ability</th>
<th>With Control for Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>ATT</td>
</tr>
<tr>
<td>Writing</td>
<td>10.868**</td>
<td>13.132**</td>
</tr>
</tbody>
</table>

*OLS* indicates Ordinary Least Squares regression, and *ATT* and *ATU* indicate the average treatment effect on the treated and average treatment effect on the untreated, respectively.
The Role of Pre-school Teacher Qualifications

- Most children some pre-school or kindergarten program, but could be large differences in the quality of programs
- No nationally agreed or consistent standards for staffing across the child care and pre-school sector
- Models are estimated to compare the effects of specific pre-school teacher qualifications:

<table>
<thead>
<tr>
<th>Qualification of pre-school teacher</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree in Early Childhood Education or Child Care</td>
<td>47.5</td>
</tr>
<tr>
<td>Other Teaching Degree</td>
<td>9.8</td>
</tr>
<tr>
<td>Diploma in Early Childhood Education or Child Care</td>
<td>24.9</td>
</tr>
<tr>
<td>Certificate in Early Childhood Education or Child Care</td>
<td>10.2</td>
</tr>
<tr>
<td>Other (No relevant Child Care or Teaching Qualification)</td>
<td>7.5</td>
</tr>
</tbody>
</table>
Causal Estimates: Average Treatment Effect on Treated

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Without Control for Ability</th>
<th>With Control for Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Numeracy</td>
<td>Reading</td>
</tr>
</tbody>
</table>

* p < 0.1, ** p < 0.05, *** p < 0.01
Conclusions

First results for Australia that show a significant impact of pre-school attendance on achievement

**Pre-school is Important:**
- For Reading, Spelling and Numeracy, causal ATT effects of 17 to 20 points
- After controlling for ability the estimated effects are reduced by 2 to 4 points
- These causal estimates are substantial, with pre-school amounting to 30-40% of the learning impact of one year of schooling, 3 years later

**Pre-school Teacher Qualifications and Specialisation are Important:**
- Children whose pre-school teacher had a diploma or degree in Early Childhood Education or Child Care gained the most from attending pre-school
- These results contrast Early et. al (2007) who find no association between teacher qualification and outcomes in the pre-school year: Qualification matters!
Implications

- Confirms the importance of high quality preschool for later learning
- COAG agreement that all children have a pre-school program delivered by a degree qualified early childhood teacher is likely to have substantial long-term benefits
- For maximal program impact, pre-school teachers should have at least a diploma level qualification
- May be a role to continue to provide incentives to study child care and early childhood education
Two papers focus on the influence of child care quality on social-emotional, cognitive and school readiness outcomes. Use teacher questionnaires as an indicator of childcare quality. Significance: evidence mainly from US studies, Australia a much more highly regulated childcare system.
Two factors from exploratory factor analysis

Activities in child-care
1. Singing, telling stories, reading books
2. Outdoor play
3. Pretend play
4. Teaching good health practices

Carer-child relationship
1. Warm relationship
2. Carer in tune with feelings
3. Child (C) values relationship
4. C shares information
5. C shares feelings
6. C feelings unpredictable ®
7. C drains energy ®
8. Carer struggles with C ®

(Gialamas, et al., 2013; Gialamas, et al., in press)
Influence of carer-child relationship - Learning

Added value of high levels of carer-child relationships

(Gialamas, et al., 2013)
Influence of carer-child relationship – Social-emotional

Added value of high quality carer-child relationship

-3 to 0

4-5 yrs
6-7 yrs

Emotional & peer problems
Conduct problems & Hyperactivity

(Gialamas, et al., 2013)
Influence of carer-child relationship – School readiness

Added value of high quality carer-child relationship

(Gialamas, et al., in press)
Conclusions

- Child-care quality beneficial for children’s learning, social-emotional wellbeing and school readiness
- No influence of activities
- Sustained influences into school years but small in magnitude (effect size = 0.07 – 0.11)
- LSAC is providing evidence on what is important in the Australian context
Getting and learning about the data

● Website
  ■ http://www.growingupinaustralia.gov.au
The Life Series
Key points

- LSAC is Australian evidence to enhance policy and practice
- Role of qualifications enhancing quality
- How things are done also important
- Much has changed in ECEC since 2004, is there a need for a new cohort?
Acknowledgements

- The Longitudinal Study of Australian Children (LSAC) is conducted as a partnership between the Department of Social Services (DSS), the Australian Institute of Family Studies (AIFS) and the Australian Bureau of Statistics (ABS).

- The views expressed in this presentation are those of individual authors and may not reflect those of AIFS or the Australian Government.

- Refer to details throughout the presentation for original sources of these analyses.