

Linking independent longitudinal data sets to investigate effectiveness of the Home Interaction Program for Parents and Youngsters (HIPPY) in Australia.

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Overview

- The importance of the early years
- HIPPY: a ‘promising’ intervention
- The national evaluation of HIPPY
 - Research design
- Propensity score matching: What is it and why is it useful?

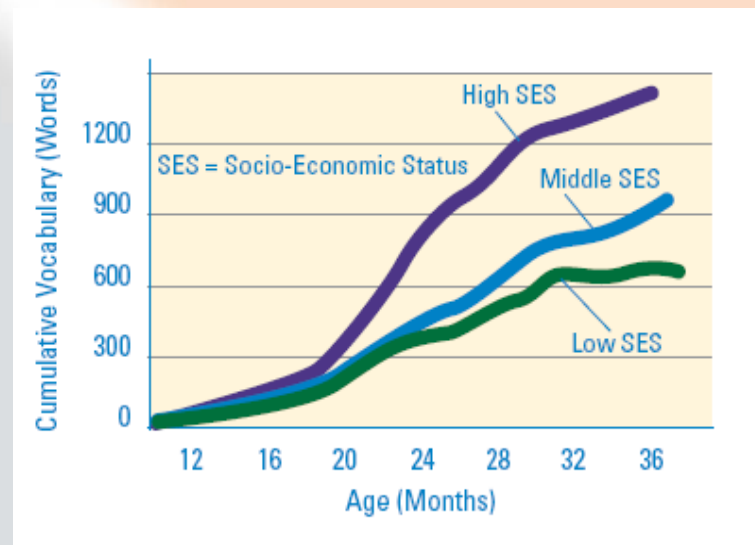
The importance of the early years

Four converging strands of research

(Frank Oberklaid, 2009)

- Brain development
- Life course
- Ecological theory
- Economics of human capital formation

Impact of Inequality on Linguistic Development



Hart & Risley (1995)

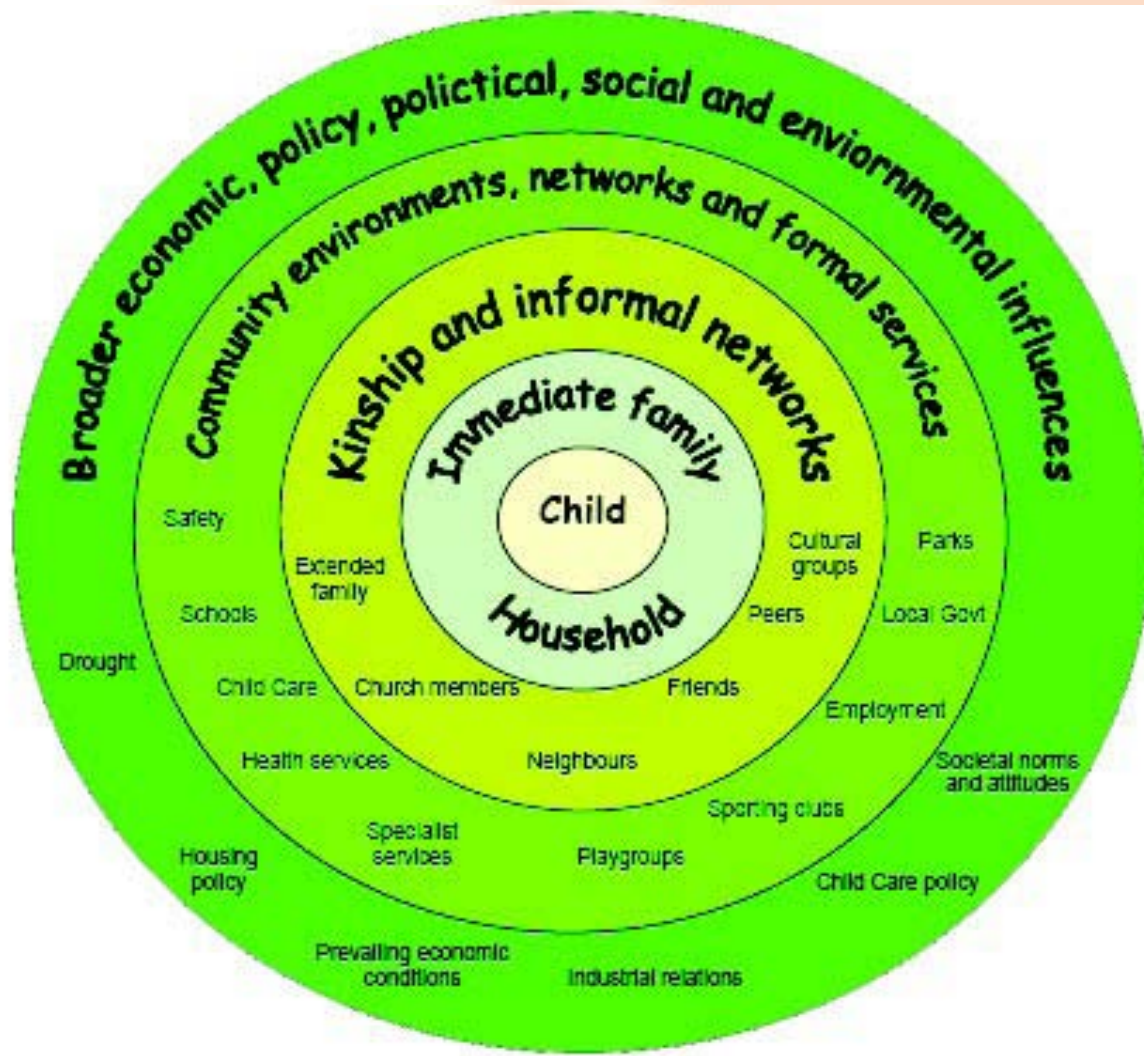
HIPPY: a 'promising' intervention

“The most successful early intervention programs have been aimed at socially disadvantaged families and have used combined strategies that target both child and parent”

(Watson & Tully, 2008)

- 2 year program starting in preschool
- Home tutors – paraprofessionals who are trained and supported by a qualified local program coordinator
- Manualised / Structured Curriculum
- Home tutors work with parent – who in turn work with child 15 min per day
- Home visiting + Centre based (group meetings)

Spheres of influence (Bronfenbrenner, 1979)



HIPPY: a ‘promising’ intervention

Programs vary on:

- the **location** of the service
- home, centre, parenting group;
- the **target**
- the child, the mother, the dyad, the family, or a combination;
- the **timing**
- beginning prenatally, in infancy, in preschool;
- the **intensity**
- full day programs to weekly or monthly home visits;
- the **extensivity**
- 1 to 5 years of intervention;
- the **curriculum**
- skills-based education, parent-child interaction training, literacy skills, parental coping skills, provision of social support

(Brooks-Gunn, 2003)

Effective ECEC interventions:

Intersect both home and childcare settings

Include quality education and direct teaching of child and support for parents and teachers

Begin in the preschool period and extend into the early school years

Are intensive in nature

2 years in duration

Include a curriculum that children can meaningfully connect with.

Comprise multiple components – [parenting skills], centre-based early childhood education and simultaneous family support strategy

What are effective ECEC programs?

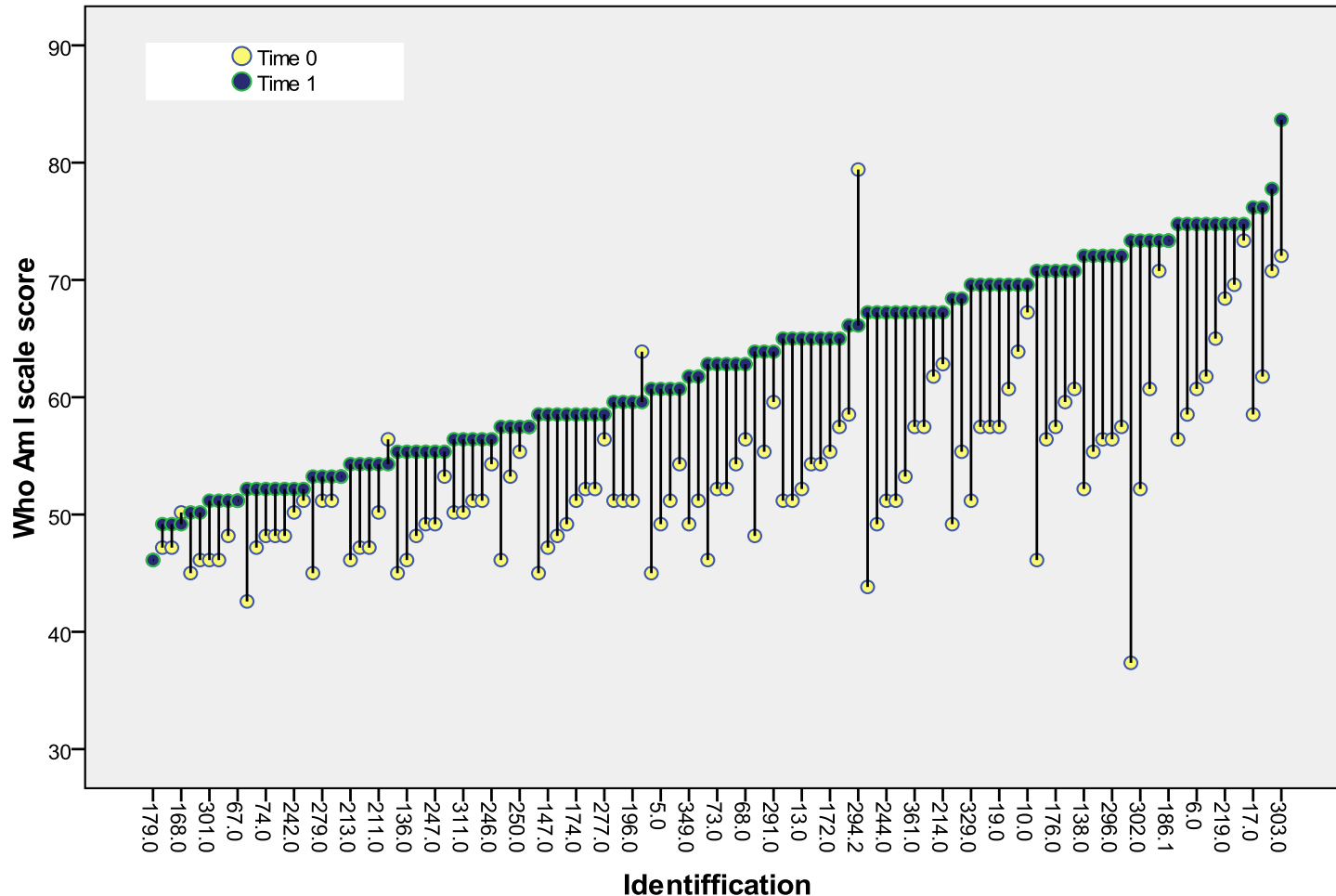
In terms of necessary components, it has been established that:

(In Sutton C, Utting D, and Farrington D, 2004)

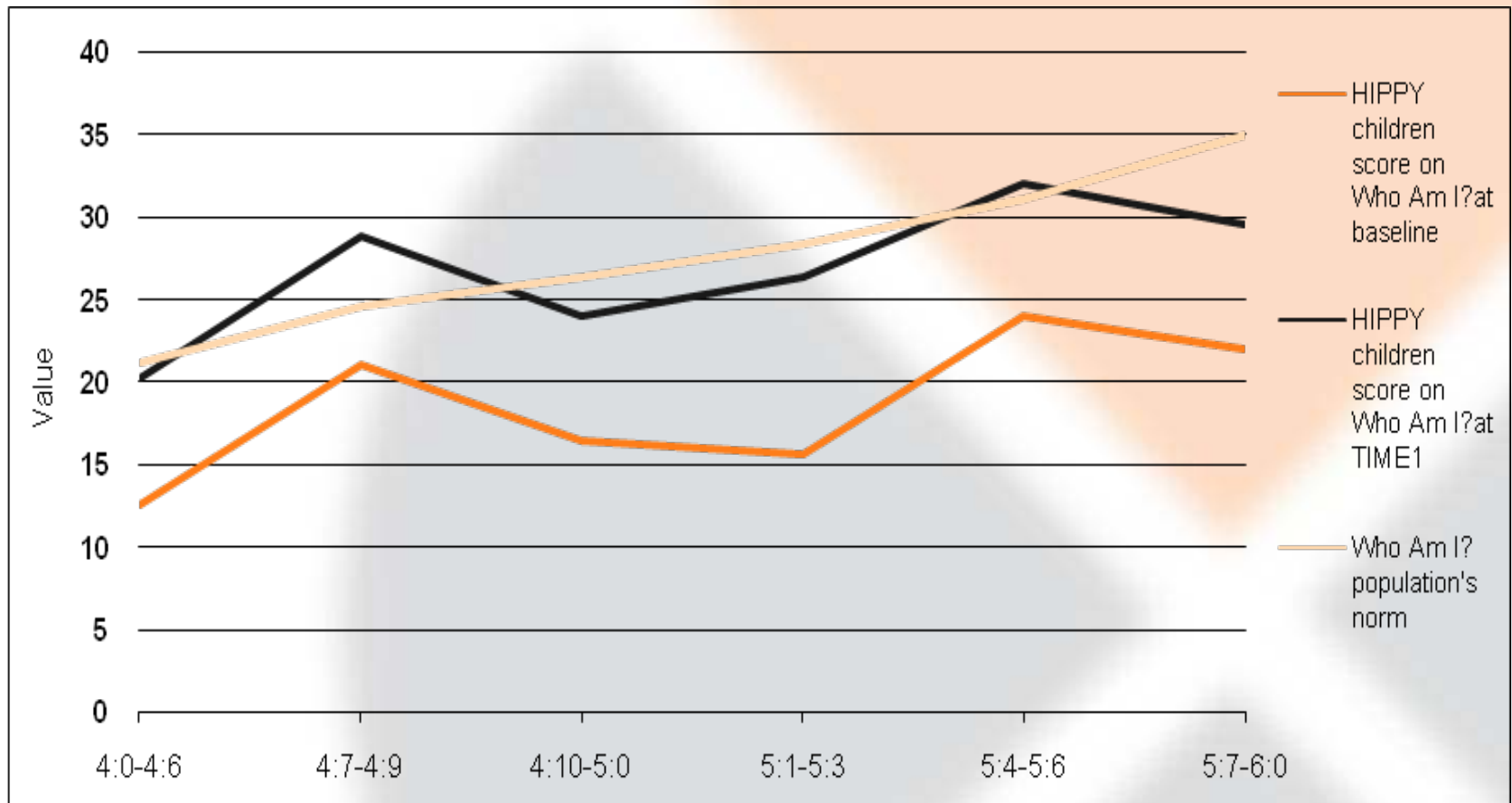
- New parenting skills must be **actively rehearsed** (Bandura, 1977; Knapp and Deluty, 1989).
- Parenting programmes must **teach principles** rather than prescribed techniques. (McMahon et al, 1981; Hutchings et al, 2004).
- It is essential that parents **practise new parenting behaviours at home** (Patterson, 1982; Webster-Stratton & Hancock, 1998).
- Programmes need to include strategies to **build positive relationships through play and praise** as well as **sanctions for negative behaviour** (Wiltz & Patterson, 1974; Hobbs et al, 1990).
- Difficulties in the **relationships between adults in the family cannot be ignored** (Dadds et al., 1987).

Previous research of HIPPY

Change in 'Who Am I?' Scores after one year of HIPPY



Early findings 1: School readiness as measured by 'Who Am I?'



*“Since HIPPY he [my child] is a lot **more confident** when tackling new activities and social situations.”*

*“At the beginning of the year, I could hardly keep him here for five minutes, now he’ll sit down and **concentrate** a lot more, at least half an hour.”*

*“She can prepare her backpack and she can write her name, alphabet, numbers and read by herself. She is much more confident, and **I feel confident to send her to school.** With my elder son [who did not do HIPPY] I did not have this confidence. What they do in HIPPY is much closer to what she will be doing at school.”*



*“**People look at you respect-wise**, because they know you’re working towards helping him.”*

*“[Before HIPPY] I used to be **impatient** and get **angry** or cross easily but now **HIPPY taught me how to start a change.**”*

*“It makes me feel rewarded **to be respected by him** and stuff.”*

*“I **met other parents** during group meetings, and I am neighbours with most of them. We develop a bond, good relationship. **Before HIPPY I just knew them, but now we feel more close.**”*

*“I may be interested in **working** with children.”*

*“I have been out of work for eight years, HIPPY was a good helping stone to **get back into work.**”*

National evaluation of HIPPY: Research design

- Monash University and Brotherhood of St Laurence partnership
- 13 sites across Australia
- 2 year longitudinal quasi-experimental research design that links into/makes comparisons with the Longitudinal Study of Australian Children
- Outcome measures
 - Child school readiness
 - Parent-child relationship
 - Parent well-being and social inclusion
 - Tutor well-being and social inclusion
- Will give strongest evidence yet of program effectiveness
- Current status:
 - Baseline and 1 year data collected and being analysed
 - Final round of data will be collected at end of this year and start of 2011
 - Report to DEEWR by July 2011

Propensity score matching

- What is it and why is it useful?
- We want to assess HIPPY's **effectiveness**.
- This will involve a comparison with LSAC children.
- HIPPY children and LSAC children are very different ...
- ... So how can we get a reasonable comparison?

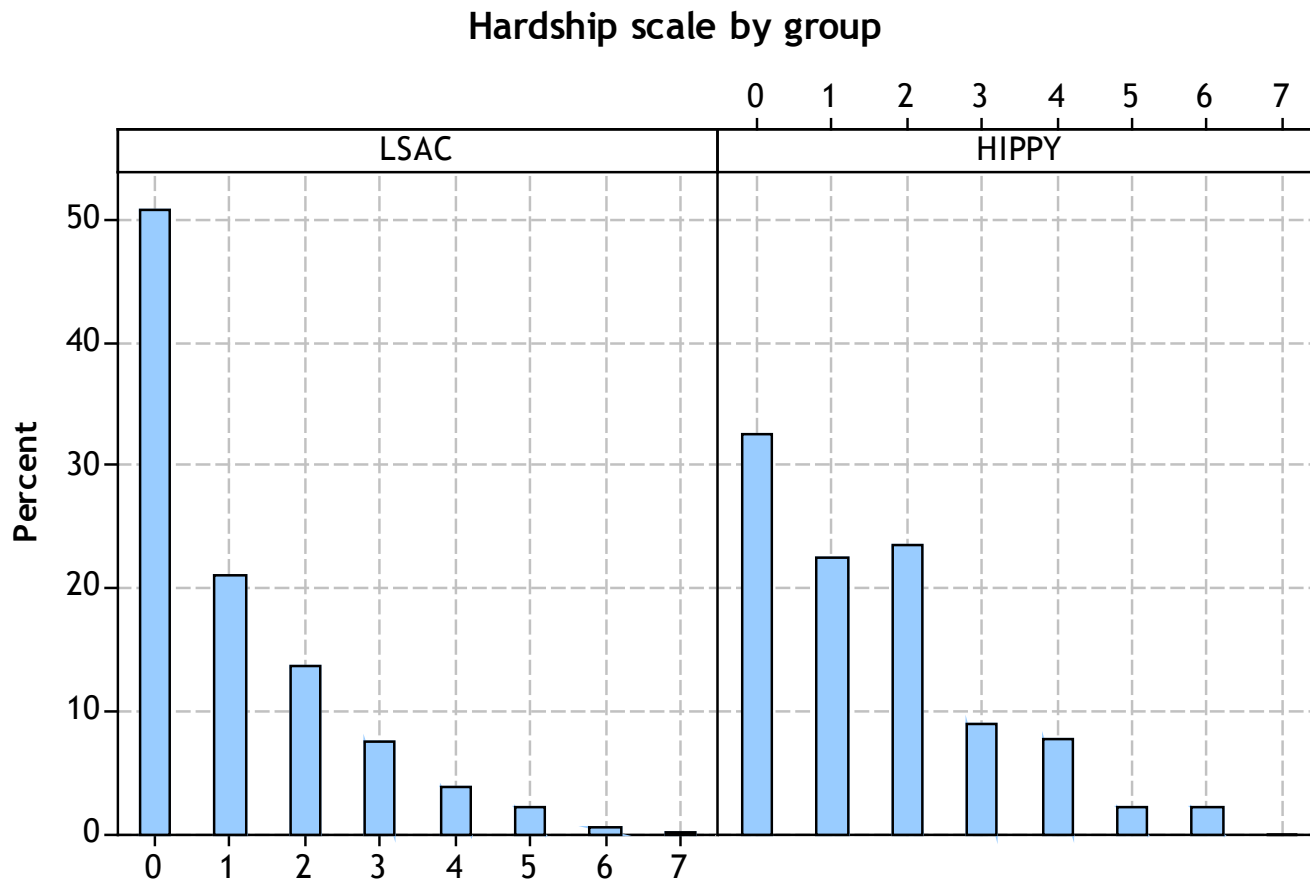
Randomized trial

- The ideal for evaluating effectiveness is a randomized controlled trial (RCT).
- A RCT is **logically, ethically and practically** possible here ...
- But maybe not **politically** possible.
- In a RCT eligibility and exclusion criteria are established;
- Child/parent is randomized to receive HIPPY or not.

Randomized trial

- This guarantees the groups are balanced on all relevant variables.
- Differences in outcome can therefore be causally attributed to HIPPY.
- We don't have that!
- Conscious selection of HIPPY children ...
- ... guarantees substantial differences between HIPPY and LSAC children.

Propensity score matching



Propensity score matching

- Percentage in lowest hardship category
- LSAC: 51%
- HIPPY: 33%
- Statistical test: $P = 0.001$
- → when we compare HIPPY with LSAC we may just be seeing a “hardship” difference.

Propensity score matching

- Propensity score idea:
 - Estimate the chance of being a HIPPY child/parent (relative to LSAC), in these data.
 - Propensity score = $\Pr(\text{HIPPY})$.
 - When analysing outcomes, always include the propensity score in any analysis.
- Adjusts for the HIPPY / LSAC differences.
- Not randomization, but the next best thing:
- Children/parents compared have the same chance of being a HIPPY child/parent.

Propensity score matching

- Analysis of any outcome is done using the applicable statistical approach:
 - Linear model for a numerical outcome;
 - Logistic regression for a binary outcome;
 - Ordinal logistic regression for an ordinal outcome.
- In each case, the model evaluates the HIPPY effect **after adjustment for the propensity score**.

Associations with HIPPY, before and after adjustment for propensity score

Variable	Before	After
Hardship scale	$P = 0.001$	$P = 0.56$
SEIFA disadvantage	$P < 0.0001$	$P = 0.27$
Who am I?	$P < 0.0001$	$P = 0.43$
ATSI	$P < 0.0001$	$P = 0.29$

Evaluating the *effectiveness* of interventions...

- When can't do RCT to obtain counterfactual
- Linking to larger established longitudinal data sets (e.g. LSAC) using propensity score matching offers a very real and valid next best option to robustly answer the question *does a particular intervention work?*

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