People Living in Place: Population circumstances for early childhood development and learning

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Centre for Research on Child and Adolescent Mental Health
“Young people’s mental health – A global challenge”
Karlstad University, Sweden
11 June 2019
Early childhood

Relevance to this conference

Context setting – early life-course circumstances that support the onward mental health of children
A 20 minute story

Questions by government:

How do you develop and implement a *population strategy* to improve early child development in the years birth to 8?

How should the government think about this in terms of the *local population* of children?

- Re-arrange existing services
- Fund new services
Sources


Part 1

The Early Years Agenda
The early years agenda

How to position policy and services to focus on children birth to age ~8 yo

What does the growth of their development tell us about how we should view prevention and intervention opportunities?

How realistic are our expectations about the identification of children in need of early childhood enrichment?
Part 2

Growth in early childhood
Observing typical growth in young children

What grows?

Very few measures of progressive elaboration and growth over extended periods of time (cognition, emotion)

Vocabulary development

Language development is agreed to be a central “pillar” of human development
Vocabulary is a robust indicator of language development
Vocabulary “grows” through life and can be estimated
Vocabulary growth as an indicator

The life-long growth of vocabulary (the semantic system) makes it a very attractive candidate for the study of cognitive growth.

It’s one of the very few early measures that can be plotted with growth curves.

Later measures: reading, math
The evidence base for this talk

Longitudinal Study of Australian Children (N=10,000)
Ongoing, biennial collection, 2002-present
Followed from ~birth (N=5000) and from age 4 (N=5000)
Randomly recruited across Australia
The Adapted Peabody Picture Vocabulary Test (PPVT)

- Given at ages 4, 6, and 8
- Growth of the semantic component
- “Receptive” vocabulary
- Item response theory
- Vertical scaling to allow the measurement of growth
Language growth 4-8 years (N=4322)
What influences this growth?
### What influences language growth?

<table>
<thead>
<tr>
<th>CHILD</th>
<th>MATERNAL</th>
<th>FAMILY</th>
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<tbody>
<tr>
<td>Gender</td>
<td>Age (teen)</td>
<td>Socio-economic area disadvantage</td>
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<td>Birthweight</td>
<td>Education</td>
<td>Reading to child</td>
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<td>Aboriginal status</td>
<td>Work hours low</td>
<td>Playgroup</td>
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<td>Ear infections</td>
<td>Parenting consistency</td>
<td>Hours in care</td>
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<td>School readiness</td>
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**29 candidate predictors**
## What influences language growth?

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<tr>
<th>CHILD</th>
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<tr>
<td>• Gender</td>
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29 candidate predictors
16 show growth effects

• Mental health distress
• Alcohol problem
• Non-English speaking
What influences language growth?

**CHILD**
- Gender
- Birthweight
- Aboriginal status
- Ear infections
- Persistent temperament
- Reactive temperament
- Sociable temperament
- School readiness

**MATERNAL**
- Age(teen)
- Education
- Work hours low
- Parenting consistency
- Parenting reasoning
- Parenting warmth
- Parenting hostility
- Smoking
- Mental health distress
- Alcohol problem

**FAMILY**
- Family structure
- Number of siblings
- Income
- Health care card
- Financial hardship
- Socio-economic area disadvantage
- Reading to child
- Playgroup
- Hours in care
- Non-English speaking

29 candidate predictors
16 show growth effects
11 in final model
How well do these predictors predict at age 4 how children will do at age 8?

The predictive utility of these 11 variables is very poor

53% of the variance in vocabulary growth was predicted by the age of the child alone

Only 7% of the variance in vocabulary growth was predicted by the other 11 predictors

Positive predictive value = 25.8% - no practical utility
Why is prediction so poor?

Look at where children start and where they wind up.
Vocabulary growth age 4-8

The children are changing position! This is why prediction from age 4 to 8 is poor.
Typical developmental growth
4-10 years (N = 4332)

A typical pattern of change in child development over time – this uses growth in language.

Academic rating scale - literacy
Part 3

Developmental circumstances
Overcoming “risk” thinking

Is there another way of thinking about risks and outcomes for children?

Can we overcome thinking about individual point-in-time risks?
Developmental circumstances

There are known risks for poorer child development
They don’t occur “one at a time”
These risks occur in “batches”
They vary in length, intensity and duration
These circumstances may offer different ways of thinking about how to design intervention strategies
So . . .

What happens when we look at risk as a developmental circumstance?

Across time
Place-based
In populations of children

We returned to our 11 individual risks and . . .
Developmental circumstances

Heat map log odds ratios

- health care card
- low income
- 4+ siblings
- maternal work hours (0)
- no reading to SC
- low maternal consistency
- maternal psych distress
- neighbourhood disadvantage
- low child persistence
- high child reactivity
- SC Indigenous
- low maternal education
- teen mother
- low school readiness
- mother NESB
- low birthweight
Developmental circumstances
Latent classes

1,415,000 children in Australia aged 0-4

Developmentally enabled (ref.) 46% = 651,000
Working poor 20% = 283,000
Overwhelmed 10% = 141,500
Developmental delay 9% = 127,500
Low human capital 8% = 113,000
Resource poor NESB 7% = 99,000
Developmental circumstances

46% of children are Developmentally Enabled
N = 650,000 Australian children 0-4 years

Typical circumstance
Older mothers, more educated, smaller families, no multiple stresses
Prevalent book reading

Child development is on time and robust

Policy prerogative
Maintain developmental encouragements and opportunities
Monitor population progress
Provide light-touch universal interventions
Risks for poor outcome by developmental circumstance

- Developmentally enabled (ref.)
- Working poor
- Overwhelmed
- Developmental delay
- Low human capital
- Resource poor non-English speaking

Number of risks

0% 10% 20% 30% 40% 50%
Developmental growth from age 4 to 8: Developmentally enabled

- They start on time – no delay
- They develop on time – no delay
This is what their growth looks like from age 4 to 8.
General points to remember

• Merely “counting” risks is misleading
• These circumstances are different
General points to remember

A group we would like to grow

Developmentally enabled (ref.)
Overwhelmed
Developmental delay

Number of risks
General points to remember

A group we would like to grow

A group that will always need specialist services in addition to EY programs
General points to remember

- A group we would like to grow
- A group that will always need specialist services in addition to EY programs
- A group that requires proactive service “reach” and navigation help
These children are about 6 months behind at age 8 and will be 2.5 years behind their age peers by the time they reach year 9 in school.

(Taylor, Zubrick and Christensen, 2019)
General points to remember

Greatest marginal gains to increase pool of developmentally enabled are with the working poor families and families with low human capital.

28% of 0-4 year olds
Part 4

Conclusions
Where we started

How realistic are our expectations about the identification of children in need of early childhood enrichment?
Expectations about early identification

Developmental growth from 4-8 is characterised by striking positional movement

Individual prediction from one point in time is very poor

Positive predictive value = .28
Expectations about early identification of individual children

When we focus on individual risks of children becoming vulnerable:

- It lacks reliability and has very low utility
- It doesn’t take you very far in policy terms
- It doesn’t allow service design or redevelopment
- It rarely matches what people experiencing adversity and poor outcomes actually talk about
- It aims too firmly at individuals and leaves out “system” and structural approaches
Where we started

What does the growth of their development tell us about how we should view prevention and intervention opportunities?
What does growth suggest about early years strategies?

Avoid targeting specific children as vulnerable too early
Commence with relatively “light touch” universal approaches
Arrange evidence based universal developmental opportunities “in place”
Capture multiple opportunities to observe/assess child capabilities
Address structural inequalities with policies to improve parent/carer skills/education and social benefits
## Developmental circumstances
### What and for who

<table>
<thead>
<tr>
<th>Tier 1 universal</th>
<th>Enabled</th>
<th>Overwhelmed</th>
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<td>Monitor population progress(^b)</td>
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\(^a\) Parenting programs, local mother’s groups, play groups, community development aimed at quality opportunities for children/families, recreation facilities, safety and area enhancements, library programs (book sharing), uptake of preschool and K provision, social marketing

\(^b\) Decennial child development surveys, broad-based child development report-card based on administrative data, census estimates, AEDC, NAPLAN
## Developmental circumstances

What and for who

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<tr>
<td>Maintain diagnostic, treatment, management, and support services: health, home, school, lifecourse</td>
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<td>Culturally appropriate support</td>
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Thank you
Supplementary details
## Language growth: how do children grow? 4-8 years

<table>
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<th>Risk factors</th>
<th>Age 4 Months behind in language growth</th>
<th>Age 8 Months behind in language growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal NESB</td>
<td>-16</td>
<td>-4</td>
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<tr>
<td>Low school readiness</td>
<td>-15</td>
<td>-6</td>
</tr>
<tr>
<td>Child not read to at all</td>
<td>-12</td>
<td>-7</td>
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<tr>
<td>Siblings 4+</td>
<td>-10</td>
<td>-8</td>
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<tr>
<td>Low family income</td>
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<td>-3</td>
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<tr>
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<tr>
<td>High child temperament reactivity</td>
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<td>-2</td>
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<tr>
<td>Area socio-economic disadvantage</td>
<td>0.30 ns</td>
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Typical developmental growth
4-10 years (N =4332)
Summary of patterns
4-10 years (N = 4332)

Examples of patterns

<table>
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<tr>
<th>Age 4 Language</th>
<th>Age 6 Language</th>
<th>Age 8 Language</th>
<th>Age 10 Literacy</th>
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<tr>
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<td>Low</td>
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• On-track (69%)
• Improving (18%)
• Declining (12%)
• Low (1%)

Our attempts to predict these groups continued to produce poor predictive utility.