

Mind the gap:
Towards a better understanding of how structural
inequalities are related to Early Childhood Education
and implications for longitudinal research

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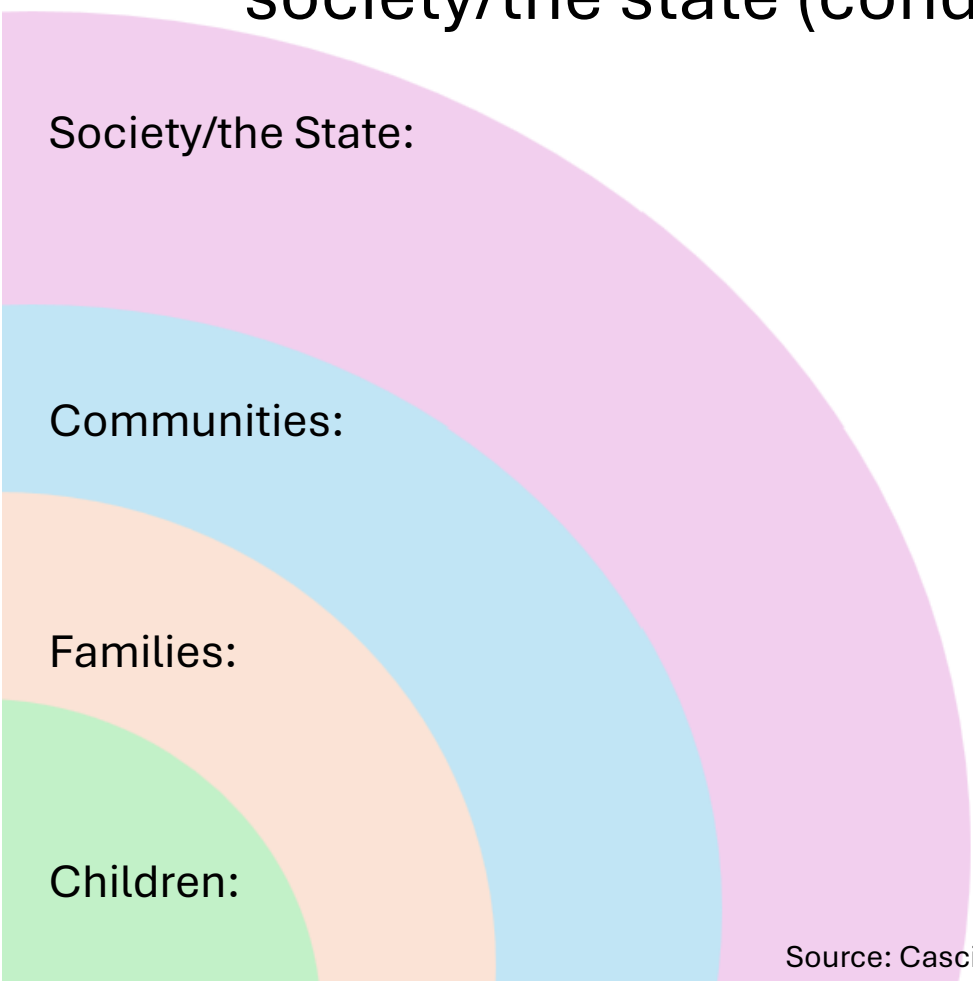
Early Childhood Education (ECE): Key Concepts

- Access: Who uses what, how much, when, where?
 - Setting type: State-maintained vs. PVI sector, home-based vs. centre-based
 - Hours per week. mornings/afternoons, which days, total period used
- Experiences: What is the ECE that is being used by families/that children experience?
 - Structural Qualities
 - What can be regulated:
Staff-child ratios, staff qualifications, curriculum, facilities
 - Process Qualities
 - What actually happens in ECE settings:
Warmth, responsiveness, stimulation, interaction



The multiple potential impacts of ECE (1)

- Example potential benefits for children, families, communities and society/the state (conditional on access to high-quality provision):



Society/the State:

Via expanded workforce: Shorter- and longer-term GDI/P;
Via boosted development & attainment: intergenerational equity, longer-term GDI/P; reduced welfare spending;

Communities:

Employment opportunities, family income levels, School-readiness

Families:

Parental (often maternal) employment; family income

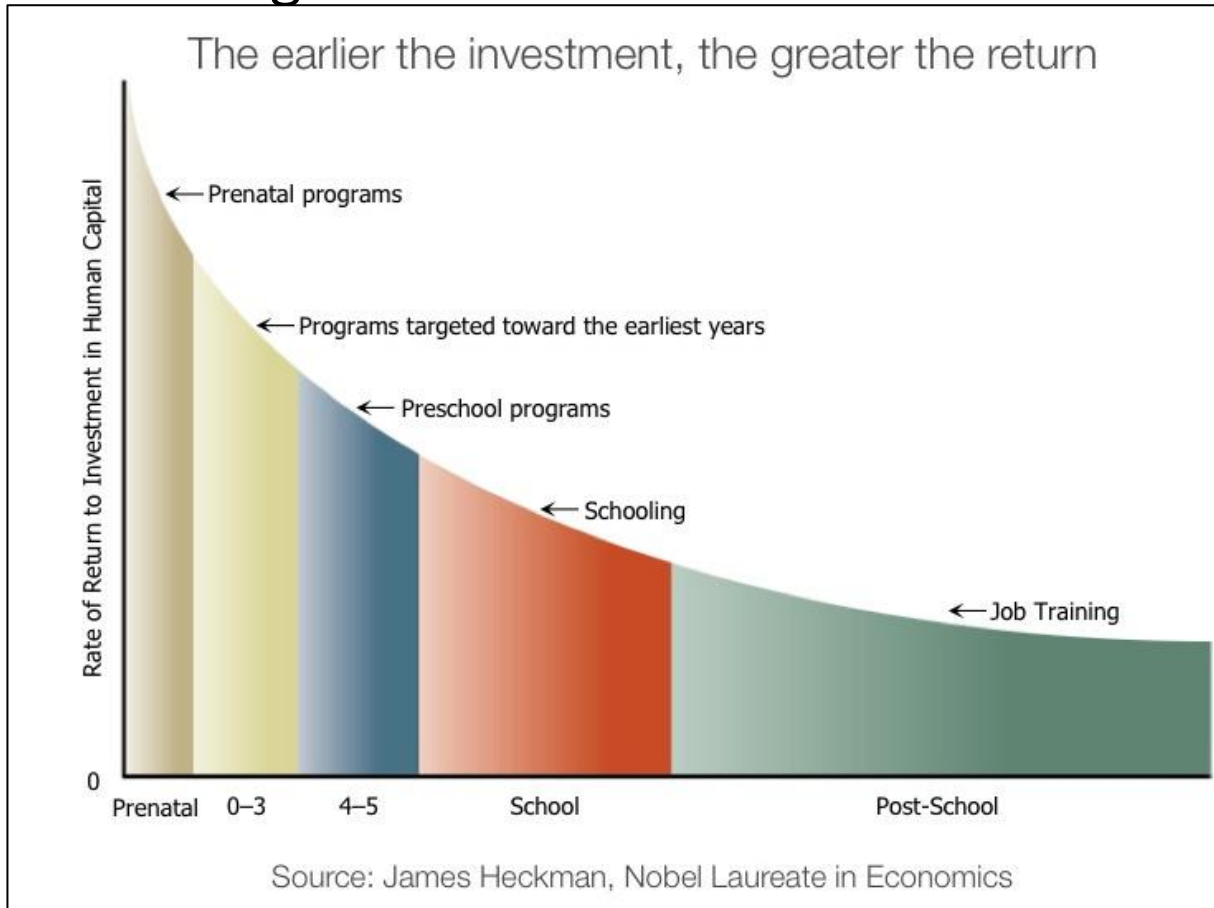
Children:

Cog., soc., & phys. Development; School-readiness

The multiple potential impacts of ECE (2)

- The long-term potential cost-savings to the State are well-known.

E.g. the ‘Heckman curve’:



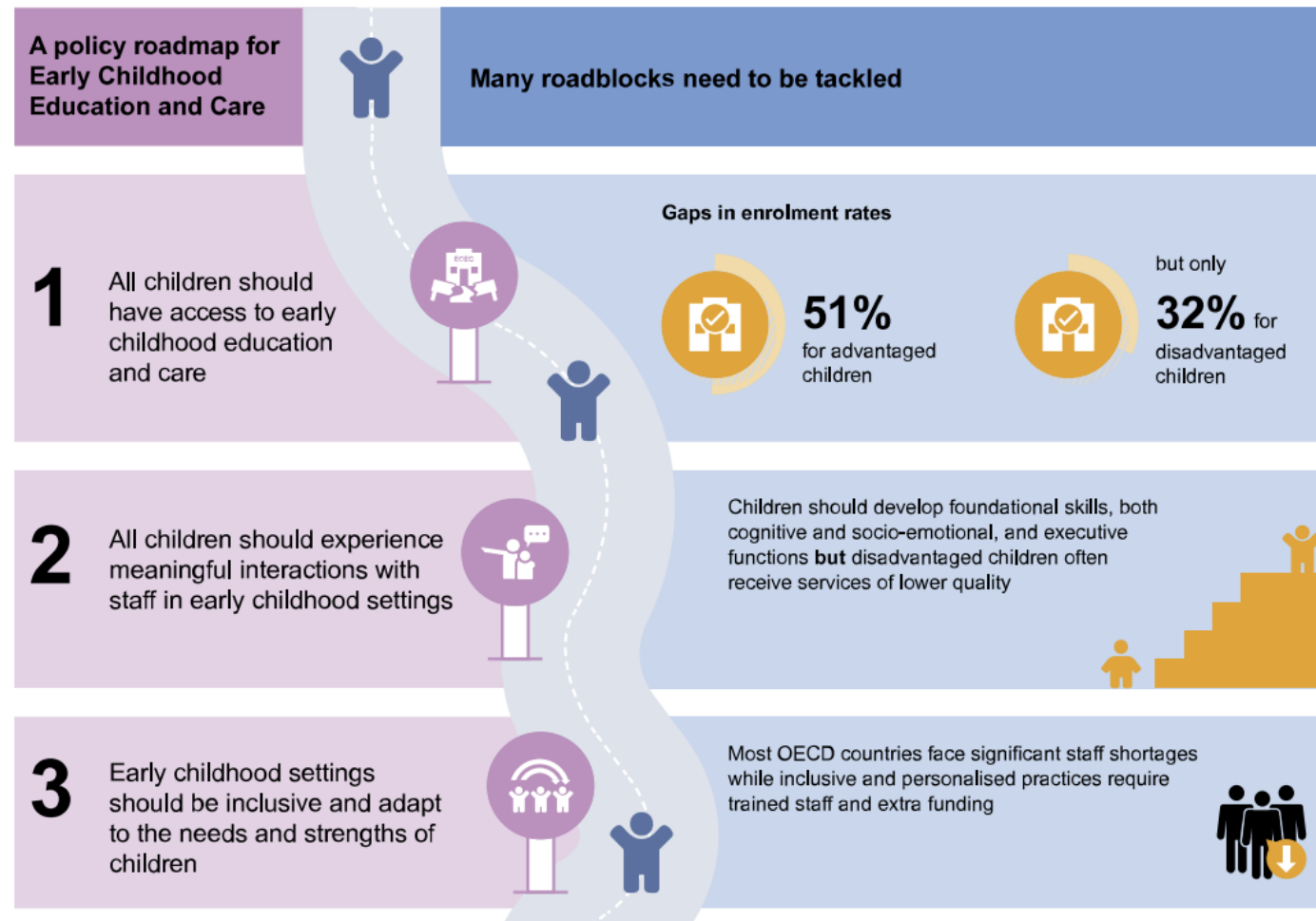
Source: <https://heckmanequation.org/resource/the-heckman-curve/>

*e.g.: “This benefit-cost analysis finds...
...that the long-term earnings effects of
Tulsa pre-K are 2.65 times the program’s
costs... ...based on relatively long-term
education outcomes.”*

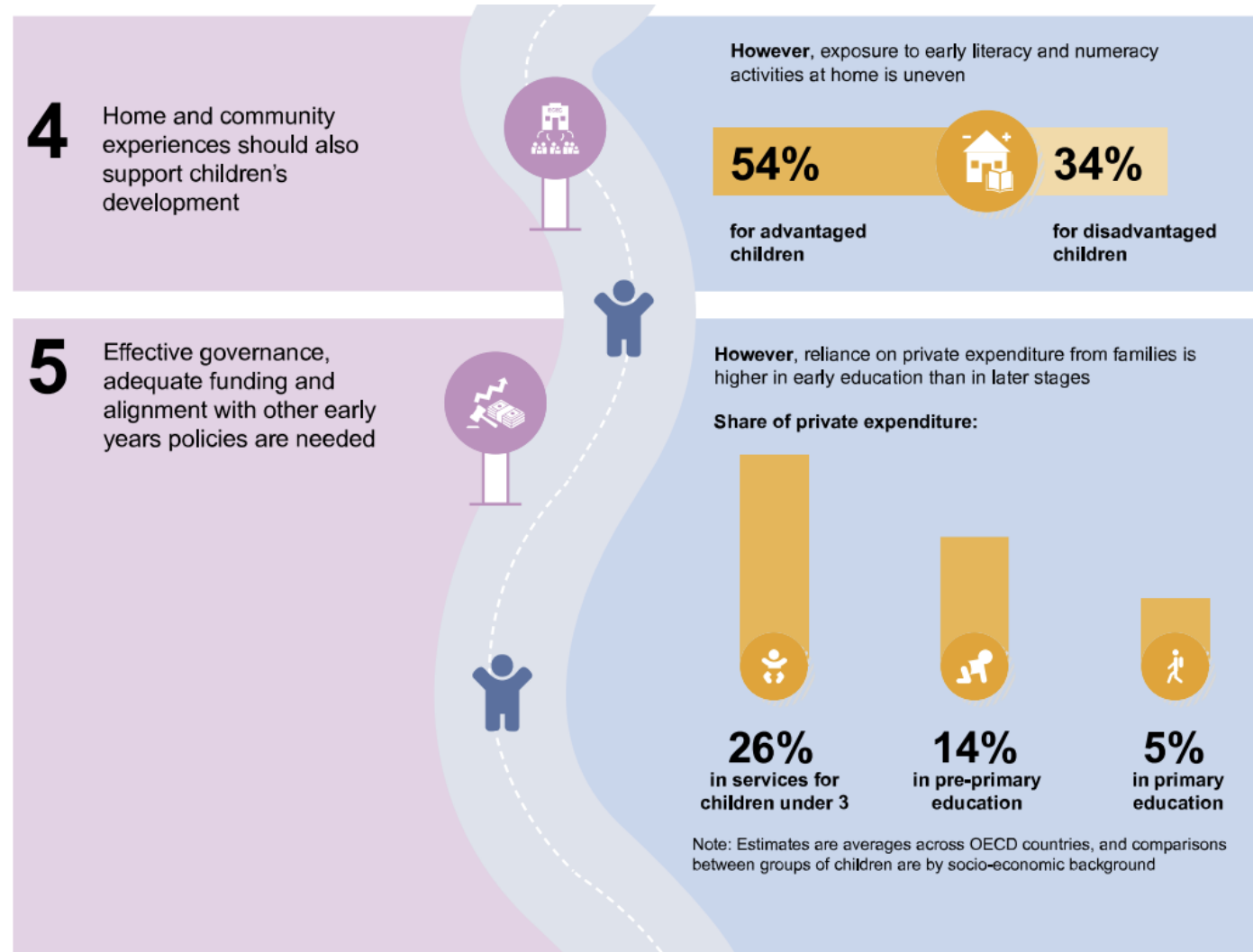
Source: <https://earlyedgecalifornia.org/wp-content/uploads/2022/11/A-Benefit-Cost-Analysis-of-Tulsa-Pre-K.pdf>

What material for evidence-informed policymaking in ECE can look like(1/2):

Infographic 1. The path to ensuring equal opportunities from the early years



What material for evidence-informed policymaking in ECE can look like(2/2):

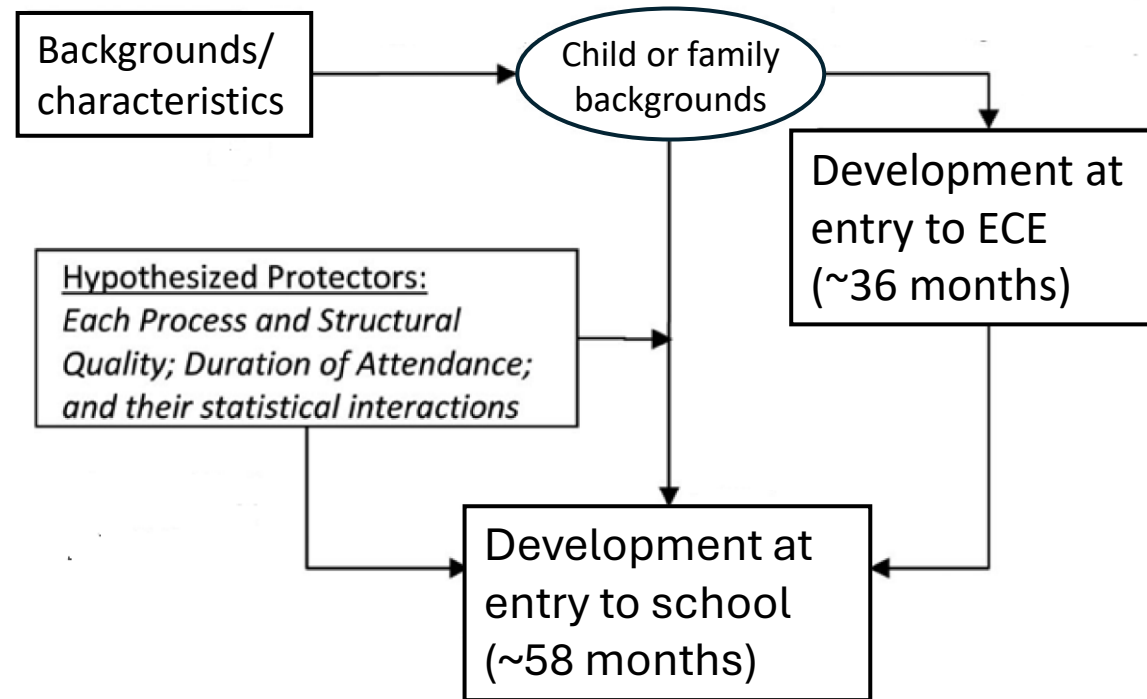


*How can Early Childhood Education (ECE)
shape, and reflect, structural inequalities?
Two disconnected research narratives*



Narrative 1: ECE has the potential to alter structural inequalities in child development (1/2)

E.g.:



Source: Hall, J., Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I., & Taggart, B. (2009). <https://doi.org/10.1080/03054980902934613>

Source: Hall, J., Sylva, K., Sammons, P., Melhuish, E., Siraj-Blatchford, I., & Taggart, B. (2013). <https://doi.org/10.1080/09243453.2012.749793>

Narrative 1: ECE has the potential to alter structural inequalities in child development (1/2)

Reductions in structural inequalities were more likely...

...when looking at:

- **Child** characteristics/backgrounds
- Pre-school **Process** Qualities
- **Longer Durations** in ECE
- **Cognitive** Development



Reductions in structural inequalities were less likely...

...when looking at:

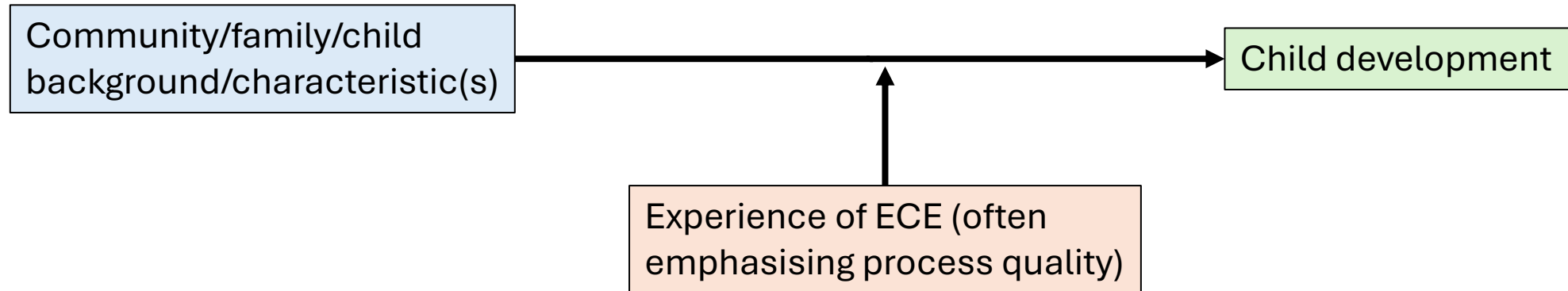
- **Family** characteristic/backgrounds
- Pre-school **Structural** Qualities
- **Shorter Durations** in ECE
- **Social/Behavioural** Development

Source: Hall, J., Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I., & Taggart, B. (2009). <https://doi.org/10.1080/03054980902934613>

Source: Hall, J., Sylva, K., Sammons, P., Melhuish, E., Siraj-Blatchford, I., & Taggart, B. (2013). <https://doi.org/10.1080/09243453.2012.749793>

Conceptual framework 1

- ...As used in quantitative research that investigates how ECE can alter structural inequalities in child development

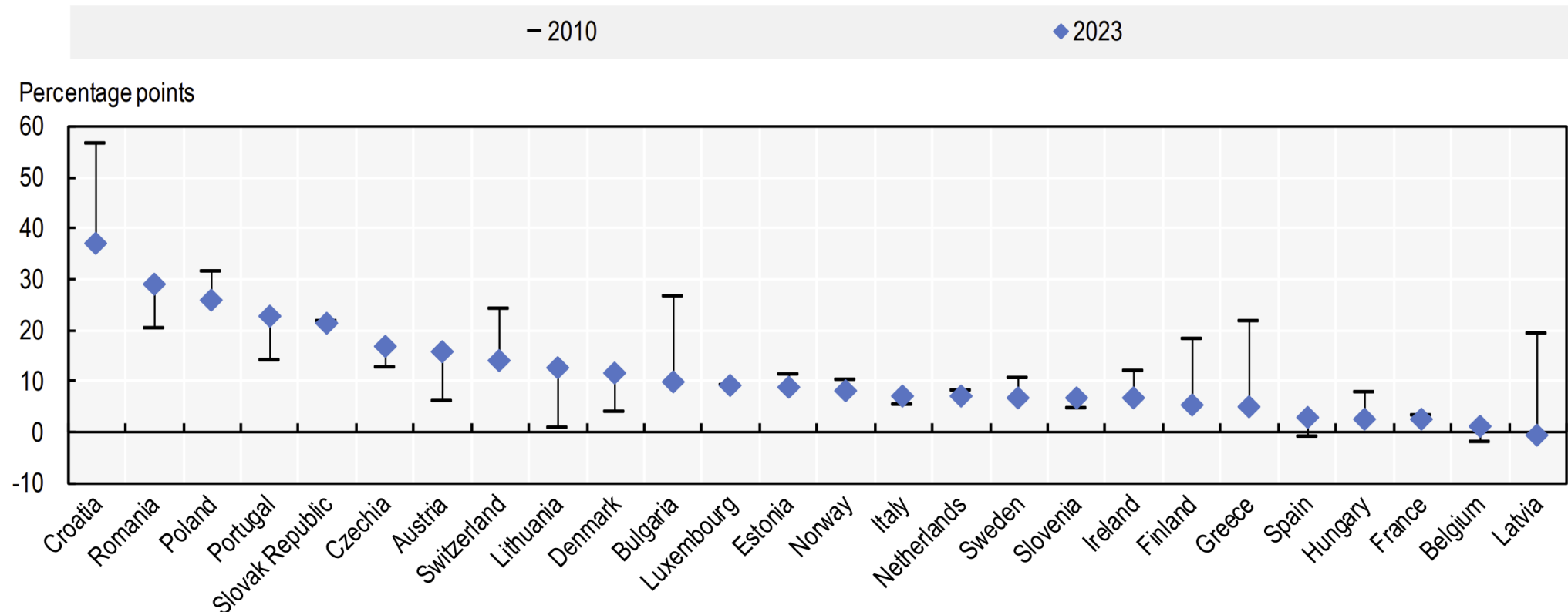


- Structural inequalities in child development are conceived to shrink with greater ECE quality
- Structural inequalities in access to high-quality ECE (blue to orange) are ignored

Narrative 2: There can be structural inequalities in access to ECE

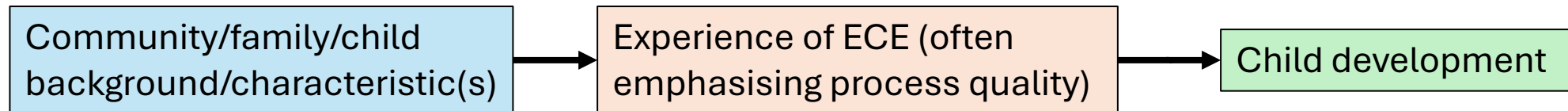
E.g.: Difference in participation rates in regulated ECEC between children from disadvantaged (lowest income tertile) and advantaged (top income tertile) backgrounds, by age and year

Panel B: 3-5 year-olds



Conceptual framework 2

- ...As used in quantitative research that investigates structural inequalities in access to ECE/higher quality ECE

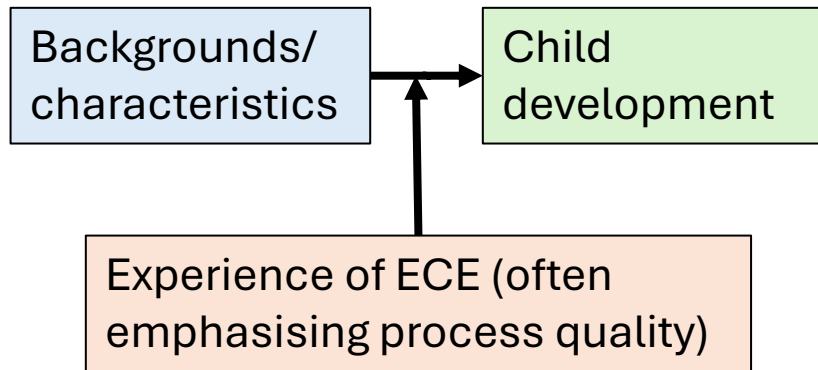


- The potential for experiences of ECE to shape child development is often treated as an effect common to all children and families
- The potential for ECE to alter structural inequalities in child development is ignored

Disconnected empirical narratives

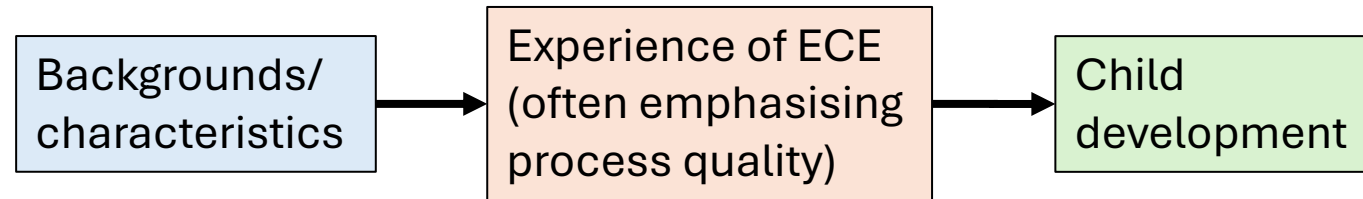
Conceptual Framework 1:

ECE for structural inequalities in child development



Conceptual Framework 2:

Structural inequalities in access to ECE



- Neither conceptual framework is wrong -- each is used within a different narrative concerning structural inequalities
- Are we missing opportunities to reduce structural inequalities by persisting with this approach though?
- Could these conceptual models be integrated, and if so, with what implications for research and policy making?

Policy consequences of this disconnect

- Material created for policymakers must weave the two evidence bases together in narrative form. E.g.:

Part of the problem is that vulnerable children are missing out on vital Early Childhood Education and Care (ECEC). Data show persistent socio-economic gaps in ECEC participation, especially for children aged 0 to 2. In eight out of 28 countries surveyed by the OECD, these gaps have widened for children aged 3 to 5. And despite relatively stable overall ECEC quality in OECD countries, disadvantaged children often receive lower-quality services.

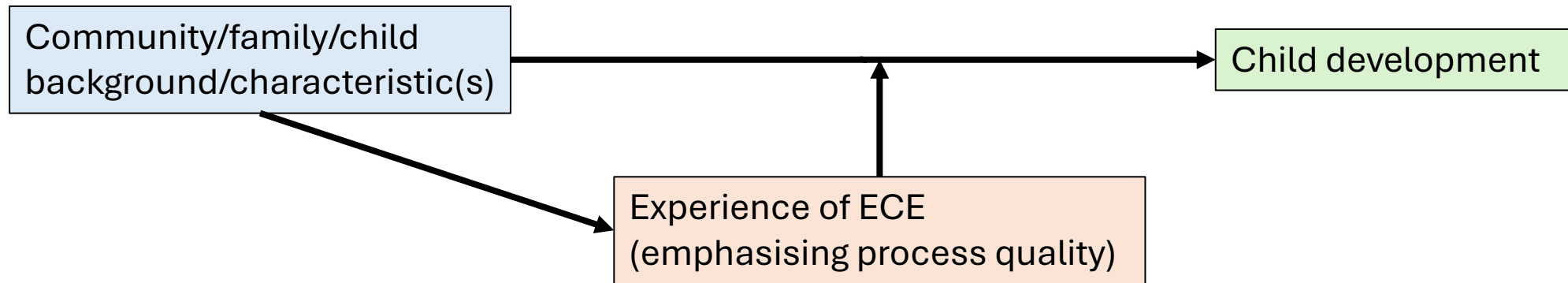
Unlike interventions aimed at addressing inequalities later in life, ECEC is a cost-effective way to close achievement gaps before they widen. Targeted, evidence-based early years policies can reduce the need for expensive remedial education and social services in the future.

- Here, the OECD (2025) notes structural inequalities in access to ECE in the first paragraph. The next paragraph then mentions the capacity of ECE to reduce developmental inequalities

Towards an integrated framework



An integrated conceptual framework



Helps researchers to ask:

“How do structural inequalities in access to ECE impact the role ECE plays in structural inequalities in child development?”

The potential benefits from this integrated framework for research

1. Yields a single integrated empirical evidence base
 - a. Unites access and outcome inequalities within one empirical story
 - b. Improved research rigor (common sample, analytic model, etc)
2. Clearer identification of where inequalities arise
 - a. Is it in ECE access or ECE experiences? Both? For whom?
 - b. Moves from narrative-based comparison to empirical evidence
3. Opens-up a new area of research looking at the links between ECE access, quality, and impact
 - a. In the context of structural inequalities as well as more broadly
 - b. Supports better evidence-informed policymaking and practice



The potential benefits from this integrated framework for policymakers

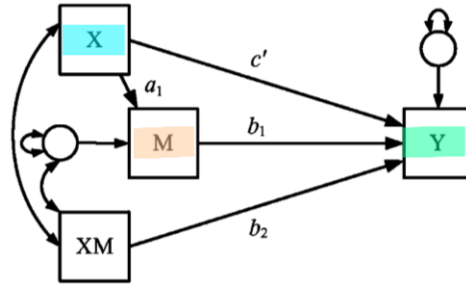
1. Integrated narratives can emerge directly from empirical evidence
2. Clearer comparison of evidence for different policy levers to support equity in education & development
 - a. “Lower barriers to access?” *and/or*,
“Alter what is being accessed?”
3. Empowers advocates for ECE (and more broadly education) spend versus alternative policy priorities
 - a. Including commitments to long-term funding, ideally across election cycles



Long-recognised ideas, but never connected or carried forward

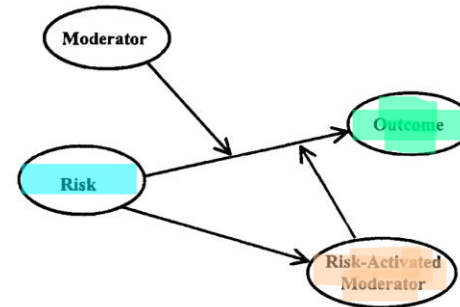
- **1980s:**

- James & Brett (1984)
- *(psychology)*
- *(statistics)*



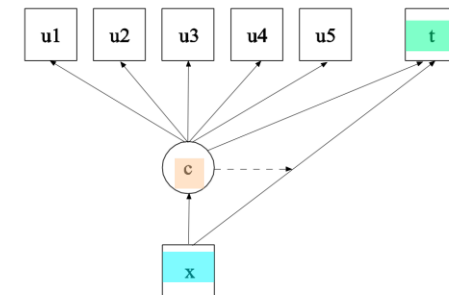
- **2000s:**

- Masten (2001)
- *(developmental psychopathology)*



- **2010s:**

- Muthén & Muthén (2017)
- *(statistics)*



Why hasn't this integrated conceptual framework been put forward before?

- **Disciplinary silos?**

- Between substantive and methodological fields

- **Operational challenges?**

- Difficult to test empirically

(a conceptual framework is limited if it is viewed as difficult to statistical implement)

- **A mismatch between tools & ideas?**

- James & Brett's (1984) model has, for example, existed for 41 years, but lacked a conceptual framework/understanding that could use it



Why now is the moment for this integrated conceptual framework

- **Policy environment**

- A global move toward evidence-informed policymaking
(e.g. *US What Works Clearinghouse; EU Evidence for Policy Hub; UK What Works Network*)

- **Receptive policymakers**

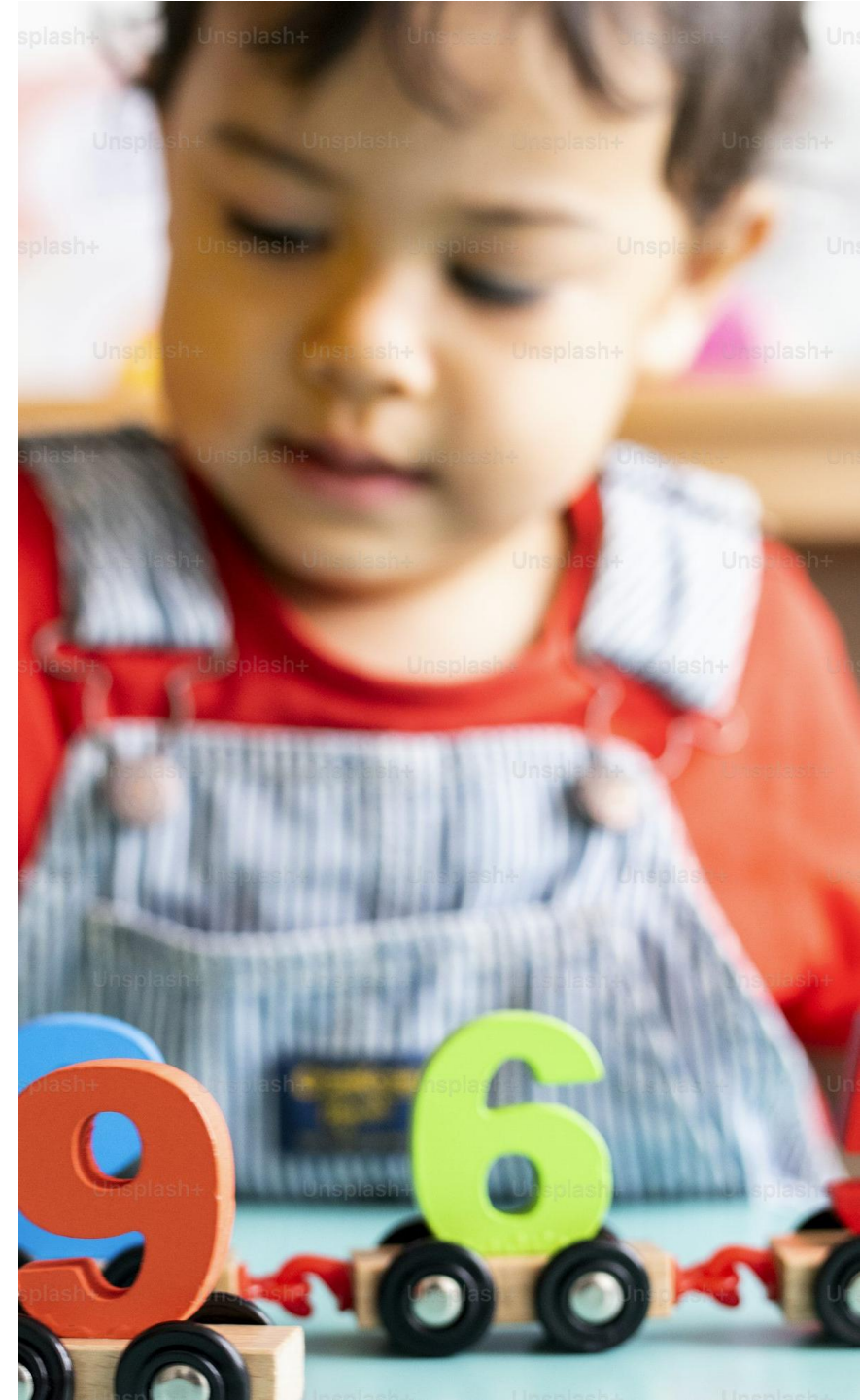
- Decision-makers increasingly willing to draw on ECE impact research
(Hence policy guidance documents such as the *OECD's 'Starting Strong' series and the Education Endowment Foundation's 'Early Years Toolkit'*)

- **Data readiness**

- Easier access to longitudinal child development datasets
(e.g. *Growing Up in Ireland; US Early Childhood Longitudinal Study; UK Millennium Cohort Study*)

- **Technical readiness**

- Operational methods now published and feasible in the free software R
(with code generation increasingly supported by AI -- to be used with care)



Putting the integrated framework to work:

Empirical illustrations of ECE's role in structural inequalities in child development



Two empirical examples

- **Example 1:** Structural inequalities pertaining to Socioeconomic Status
- **Example 2:** Structural inequalities pertaining to ethnicity



Example 1: Structural inequalities pertaining to Socioeconomic Status

- Families, Children, and Child Care (FCCC) study data
 - Publicly accessible data: <http://www.familieschildrenchildcare.org/>
 - A prospective longitudinal study of 1201 UK children from birth to school-entry
 - (*operationalised using the ‘latent random coefficient’ method; see Hall et al. 2020*)
- Families from higher socioeconomic backgrounds were likely to use ECE for more hours, and this greater usage of ECE was found to widen socioeconomic gaps in children’s age 4 non-verbal cognition

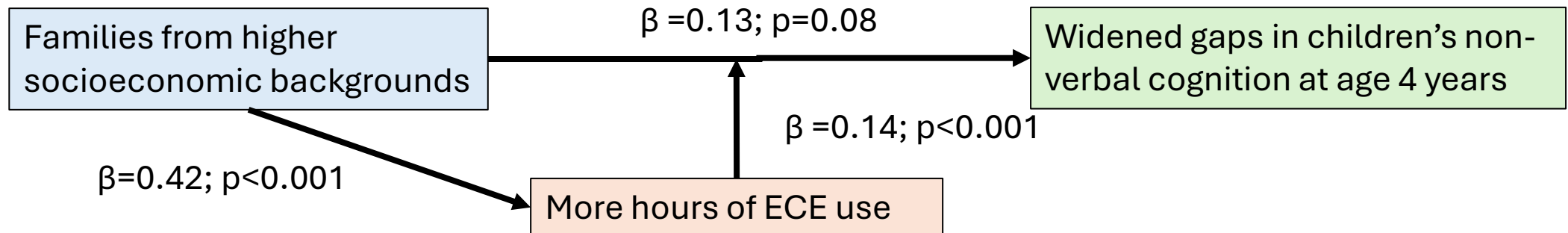
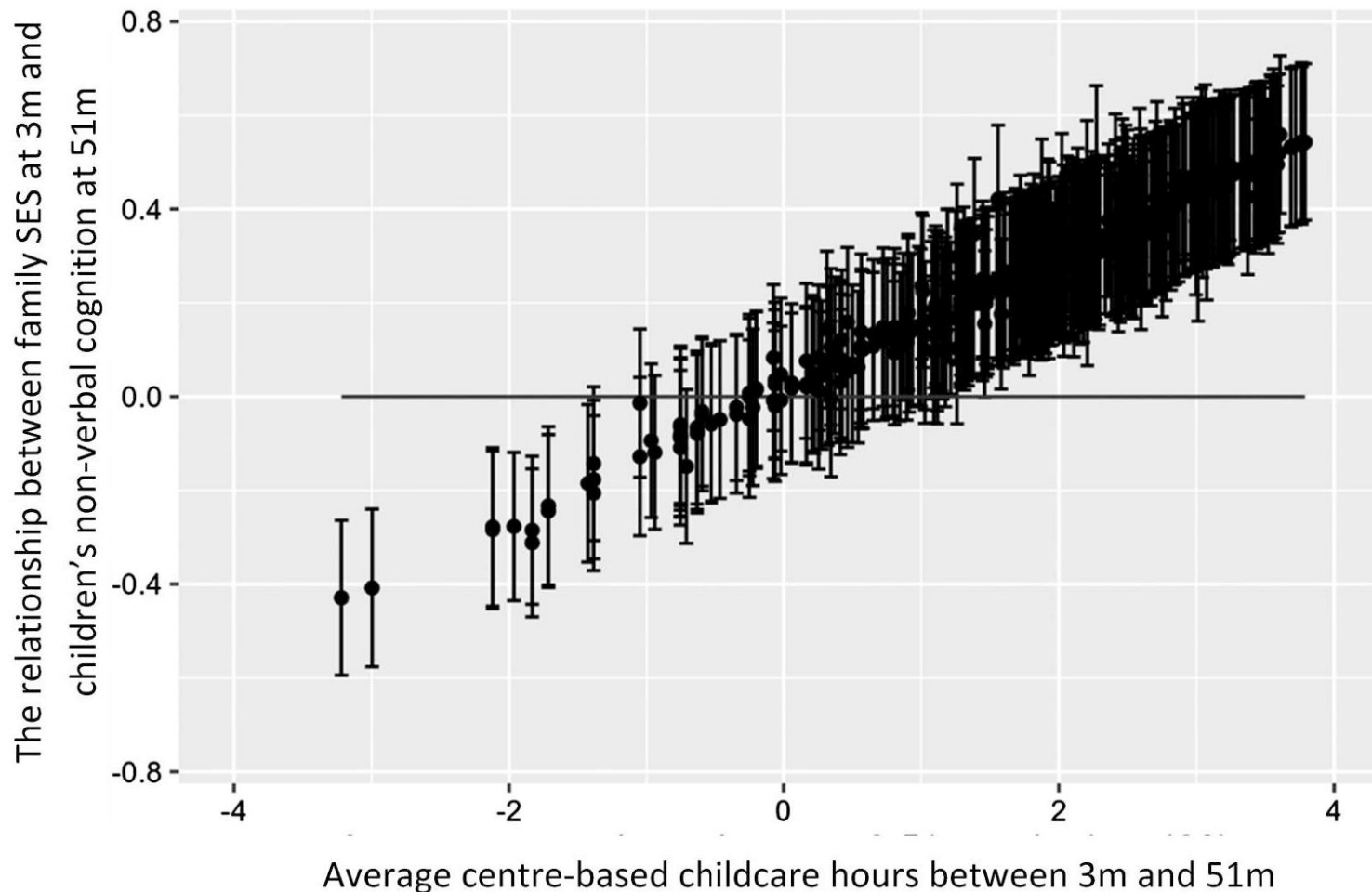


Illustration: Greater usage of ECE being found to widen socioeconomic gaps in children's age 4 non-verbal cognition within the FCCC data



Example 2: Structural inequalities pertaining to ethnicity

- Effective Provision of Preschool Education (EPPE) project data
 - Publicly accessible data:
<https://datacatalogue.ukdataservice.ac.uk/studies/study/7540#details>
 - A prospective longitudinal study of 3171 UK children from 3 years to adulthood
 - (*operationalised using the ‘latent random coefficient’ method; see Hall et al. 2020*)
- Families identified in EPPE (2001) as having a *Black Caribbean* background were more likely to use centre-based ECE characterised by more inclusive practices, and attendance at such settings was associated with narrower gaps in children’s age-4 verbal cognition linked to ethnicity.

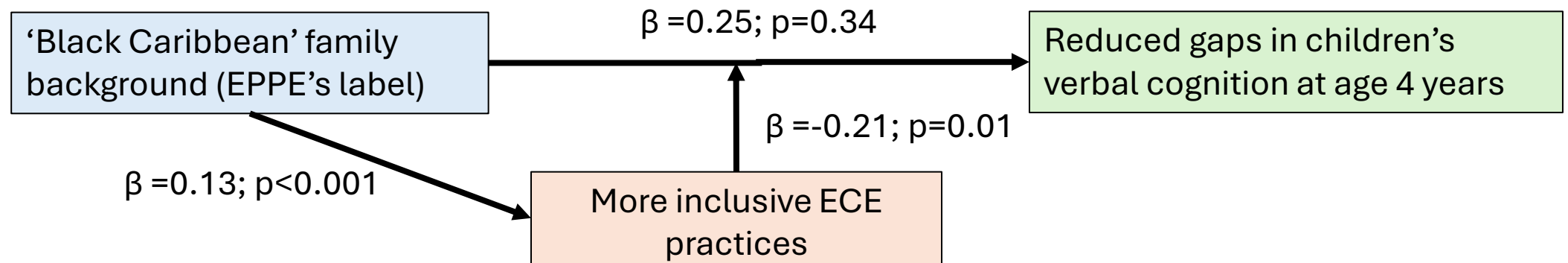
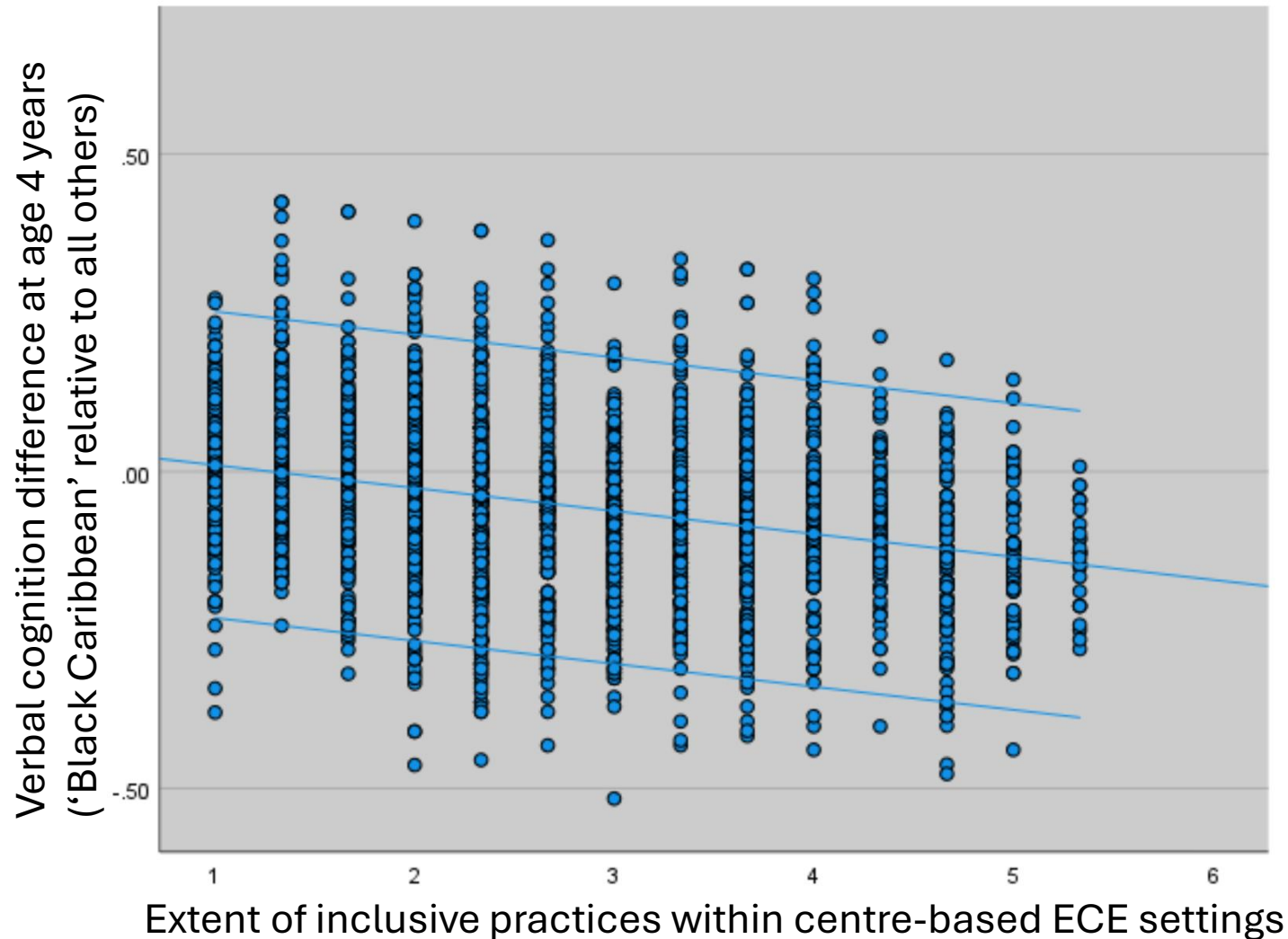


Illustration: Use of centre-based ECE settings characterised by more inclusive practices was associated with narrower ethnicity-related differences in children's age 4 verbal cognition (Black Caribbean relative to all others)



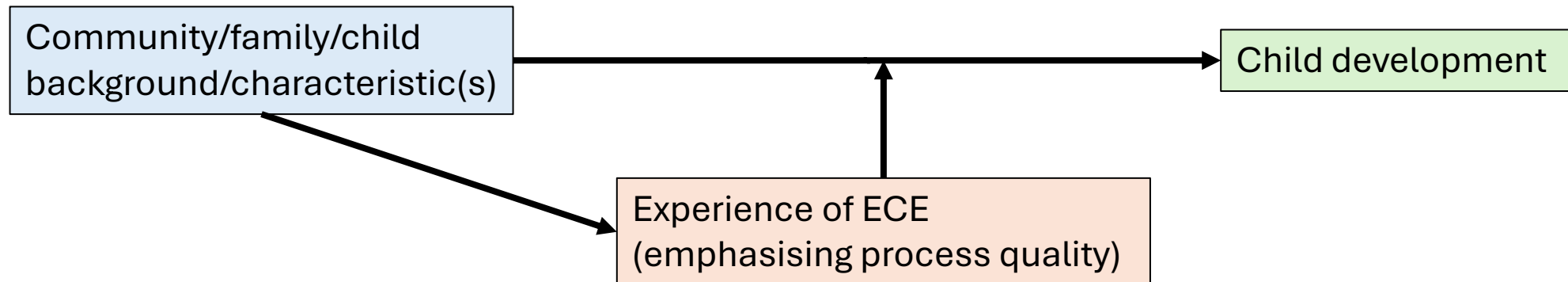
From evidence to understanding:

Drawing out the lessons and implications.



Towards a fuller understanding of ECE's role in structural inequalities

- Evidence-informed policymaking is now the norm internationally – and ECE has helped lead that shift
- Yet evidence on who accesses ECE and what difference it makes to children's development has remained disconnected
- The new integrated approach connects those threads, giving us a clearer, testable picture of ECE's contribution to equity in education and child development



A call to action – and extending the lens

A Call to Action:

- *For researchers:* Integrate access and outcome inequalities into research designs
- *For policymakers:* Call for and use such joined-up evidence

Extending the Lens:

- The same integrated way of thinking can illuminate other public services and targeted interventions
(e.g. mental health, anti-bullying, early health, family diet)



Closing reflections

1. Early childhood education showcases what evidence-informed policymaking can look like -- and what it can achieve
2. The evidence informing policymaking can be improved by research better integrating studies of **inequalities in ECE access** with studies of **inequalities in child outcomes**
3. And this integrated approach has value beyond ECE -- for other public services and targeted interventions



Thank You – and over to you

- **Questions and Comments?**

What access or practice lever would you move first -- and why?

Email: J.E.Hall@Soton.ac.uk



- **Help take this integrated approach forward? The core papers:**

Hall, J., Malmberg, L. E., Lindorff, A., Baumann, N., & Sammons, P. (2020). Airbag moderation: the definition and statistical implementation of a new methodological model. *International Journal of Research & Method in Education*, 43(4), 379-394. <https://doi.org/10.1080/1743727X.2020.1735334>

Hall, J., Palardy, G., & Malmberg, L-E. (2024). Selection effects in education and implications for educational opportunity: State of the field and future directions. *School Effectiveness and School Improvement*, 35(3), 298–317. <https://doi.org/10.1080/09243453.2024.2385934>