Early childhood education and care in Europe's 21st century

Why we need more research & development

Paul Leseman
Utrecht University

Brussels, October 10, 2017

INCLUSIVE EDUCATION AND SOCIAL SUPPORT TO TACKLE INEQUALITIES IN SOCIETY

Curriculum and Quality Analysis and Impact Review of European Early Childhood Education and Care

INTRODUCTION

Laying the Foundation for Lifetime Learning

ALTHOUGH YOU MAY HAVE FORGOTTEN YOUR EARLIEST EXPERIENCES BEFORE school, they continue to affect many aspects of your life, perhap with math or even the size of your paycheck. Early childhood edu is focused on understanding these impacts, both near- and long-te in this section detail what is known about these processes and prog remains to be explored.

In addition to acquiring cognitive skills, the ability to pay at directions, and function productively in groups helps a child get school. Diamond and Lee (p. 959) review how such skills can b school. Dickinson (p. 964) describes how a teacher's ability to su and conceptual knowledge can foster early language skills, providi for later literacy. Clements and Sarama (p. 968) discuss effective w early grounding in math. Without consensus on how, and when, t cognitive psychologists and education researchers differ regarding the research are most important. Klahr *et al.* (p. 971) highlight the cognitive psychology to this field.

The value of investment in early education depends on the c ventions and the conditions under which they are administered. I reviews longitudinal studies and meta-analyses that demonstrate h interventions can produce persistent effects on cognitive, social, an comes. In early childhood education, as in other domains, scientific to inform public policy. Gormley (p. 978) discusses situations and p help or hinder the influence of research on policy. In an Education F (p. 982) argues that the impacts of even the best preschool curric be limited by toxic social stress on the developing brain. He sugge programs aimed at improving the ability of caregivers and educa most vulnerable children take advantage of early enrichment oppo

In a series of News stories, Mervis looks at three longitudin ing the economic argument that high-quality early intervention somely for society as well as individuals (p. 952). He also reviews Head Start program, which provides education and other ser lion low-income U.S. children and their families (p. 956), and i Lombardi (p. 957), who leads the Obama Administration's effort health and education programs for young children in the United *Careers* profiles neuroscientists working with children to explo dyslexia and dyscalculia, characterized by difficulties in reading a

Early childhood education remains peppered with both op debate. Continued progress will require new research that bridges ciplines of neuroscience, psychology, sociology, economics, public policy, health, and education. Although many best practices remain to be elaborated, research demonstrates that these years lay a powerful foundation for subsequent learning, and that they should be taken at least as seriously as schooling in later years.

– PAMELA HINES, MELISSA MCCARTNEY, JEFFREY MERVIS, BRAD WIBLE

Investing Early in Education

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special/education2011/.

Science

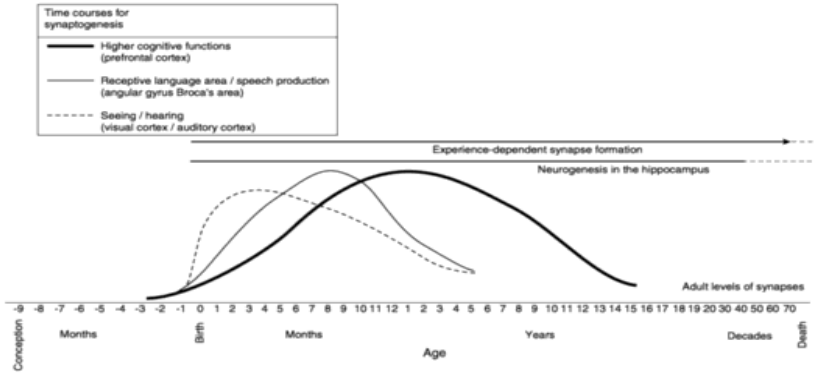
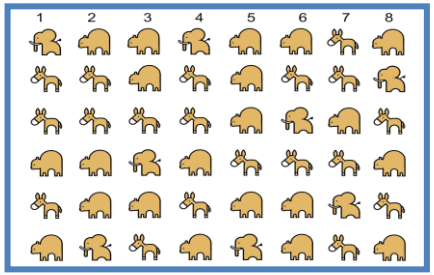
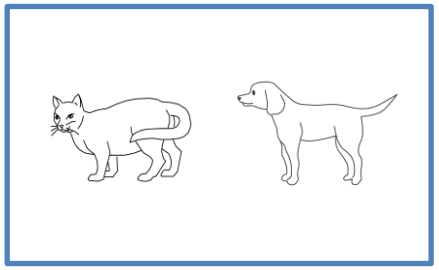


FIGURE 8-1 Human brain development. SOURCE: Charles A. Nelson, University of Minnesota. Reprinted with permission.



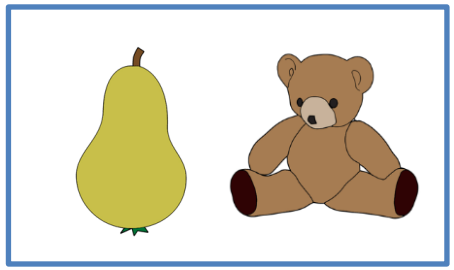
Selective attention
'Find the elephants'

Working memory
updating – 'find the hidden toys'

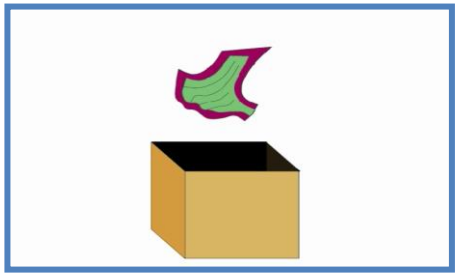


Inhibition
'Make the sound of the other animal'

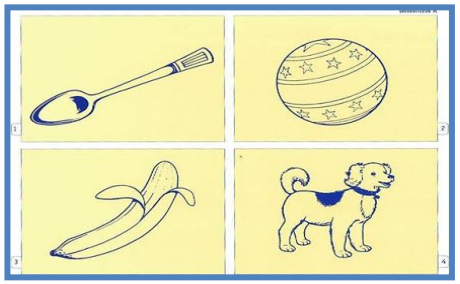
Delay of Gratification
'You must try not to touch the gift'



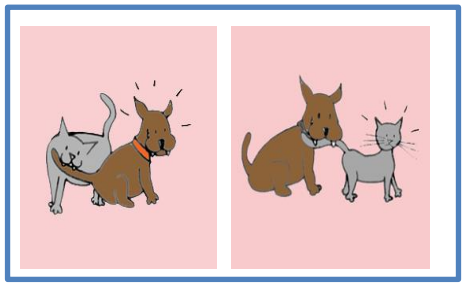
Phoneme perception
'Where is "pear"?'



Nonword repetition
'Look, a *loon*!
Say *loon*.'

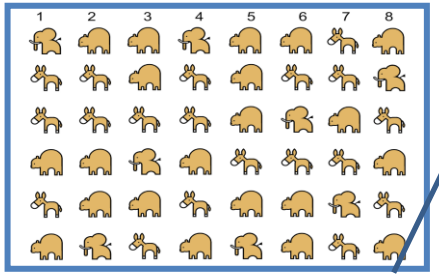


Vocabulary
'Where is …"spoon"?'



Grammar
'The cat bites the dog'.
Where do you see '…'?

Mulder et al. (2014)



Sel
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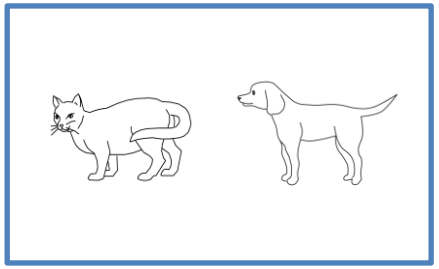
'cool' (cognitive) executive functions

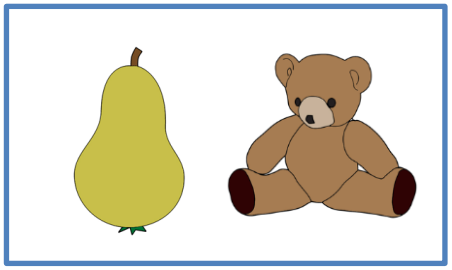
Wo
updating – 'find the hidden toys'



Inhibition
'Make the sound of the other animal'

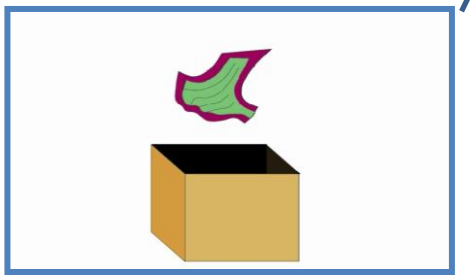
D
'Y
to

'hot' (emotional) executive functions



Phoneme perception
'Wher

'language learning system



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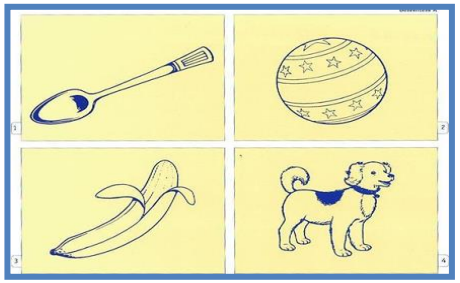

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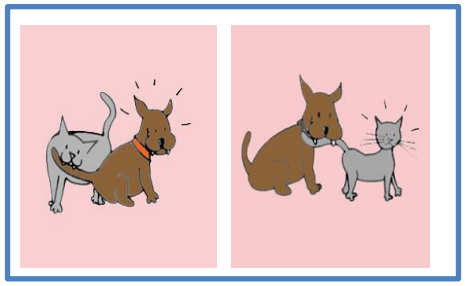
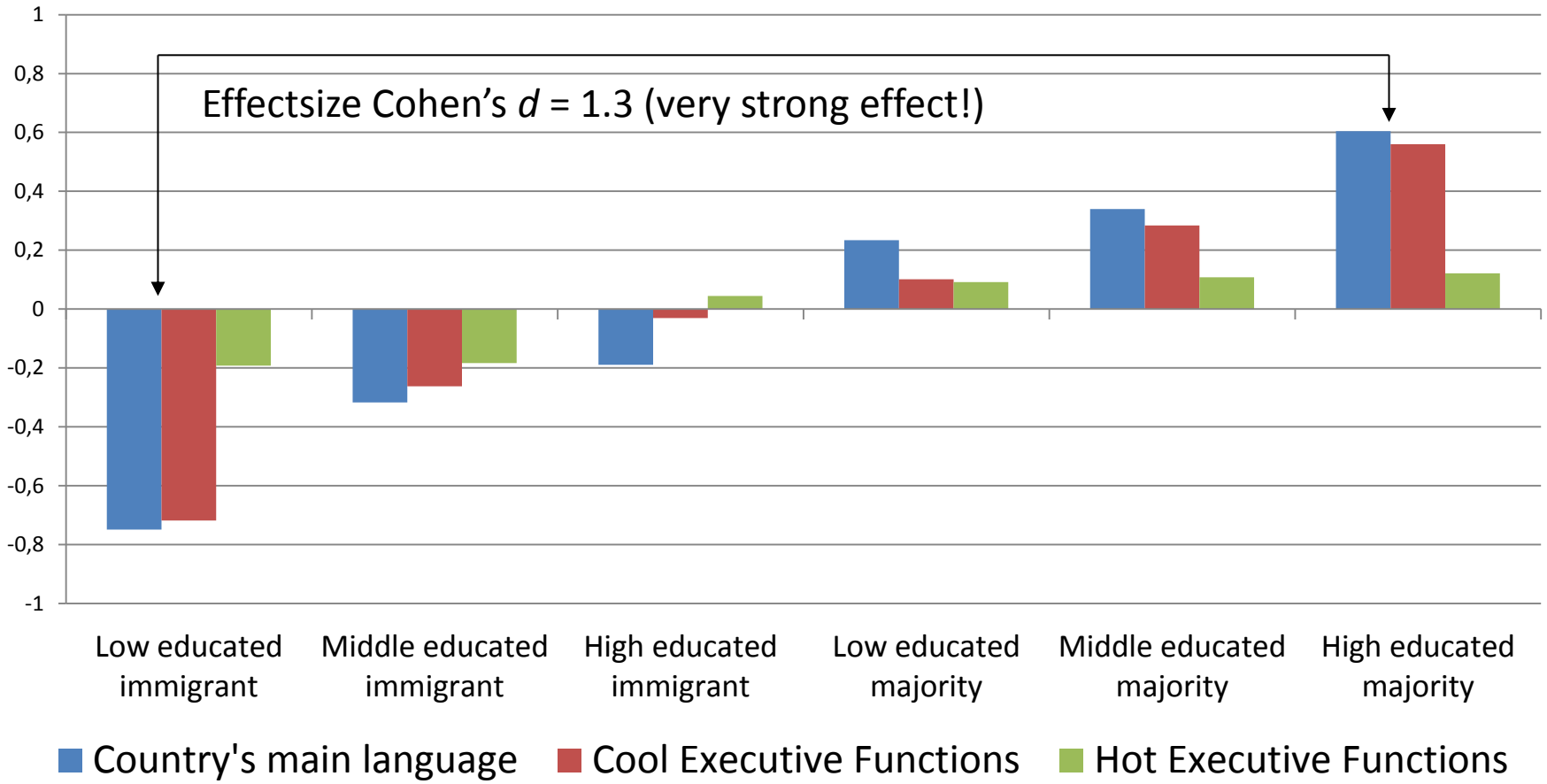


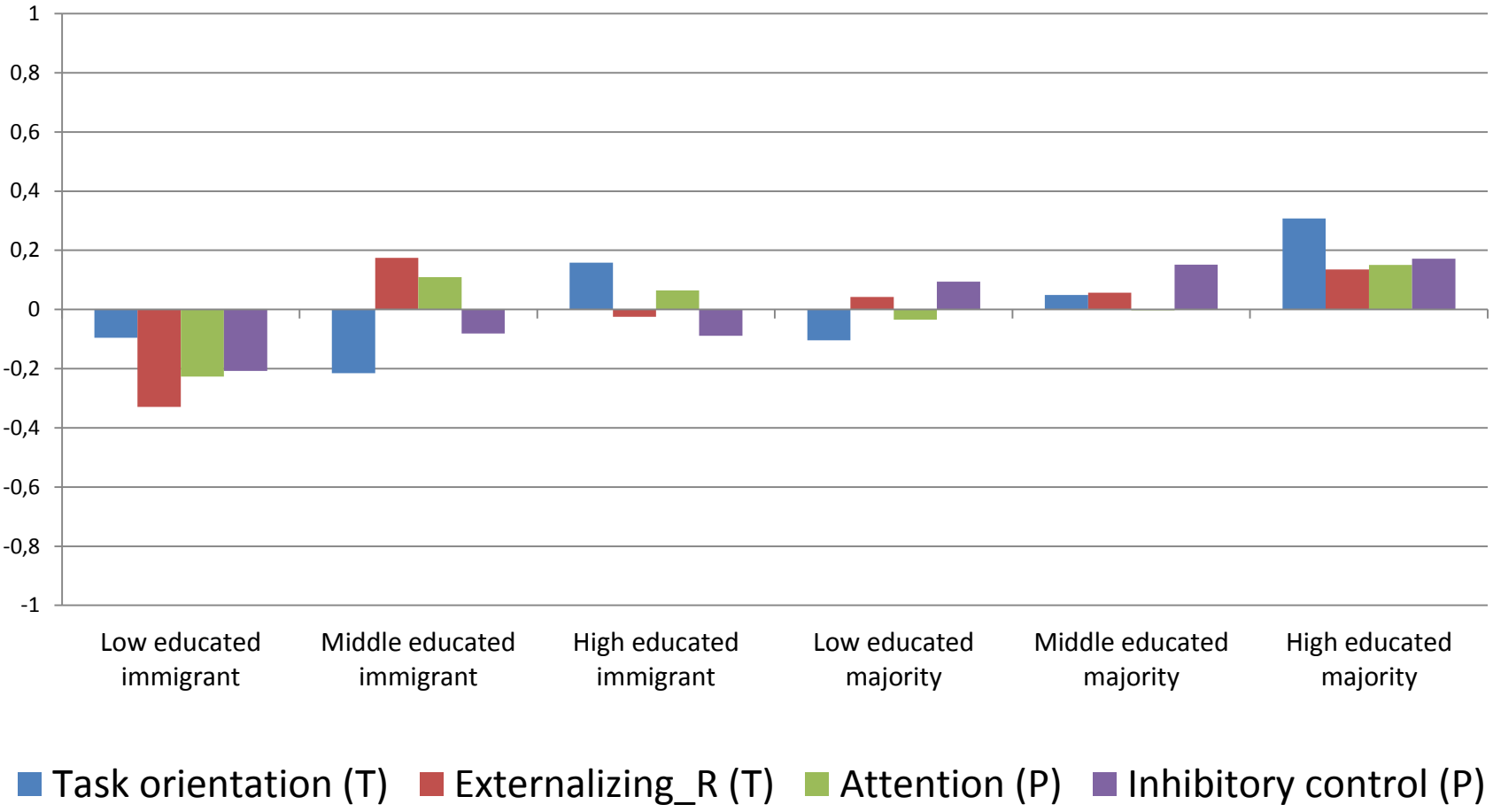
Grammar
'*The cat bites the dog*'.
Where do you see '…'?

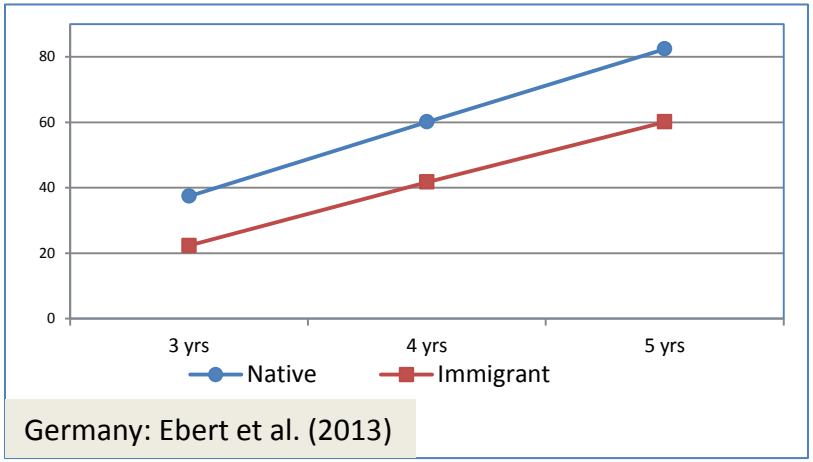
Mulder et al. (2014)

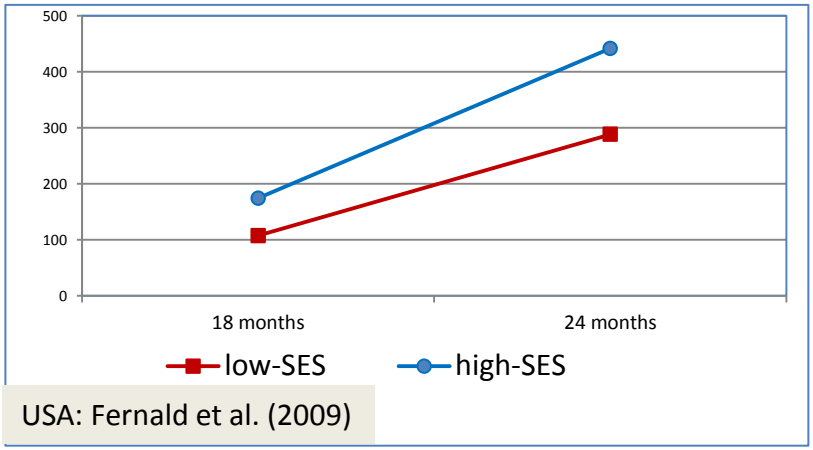
Age-two differences in language and EFs by family background (N ≈ 3000)

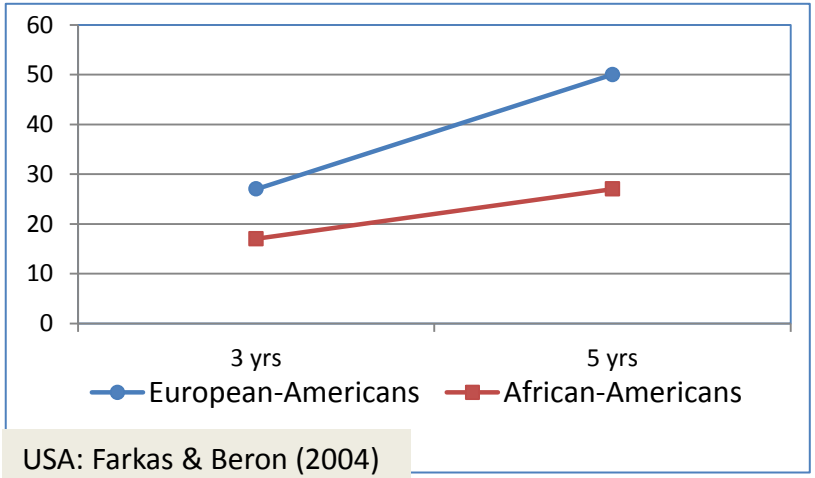


Age-two differences in teacher and parent reported behavior (N ≈ 3000)





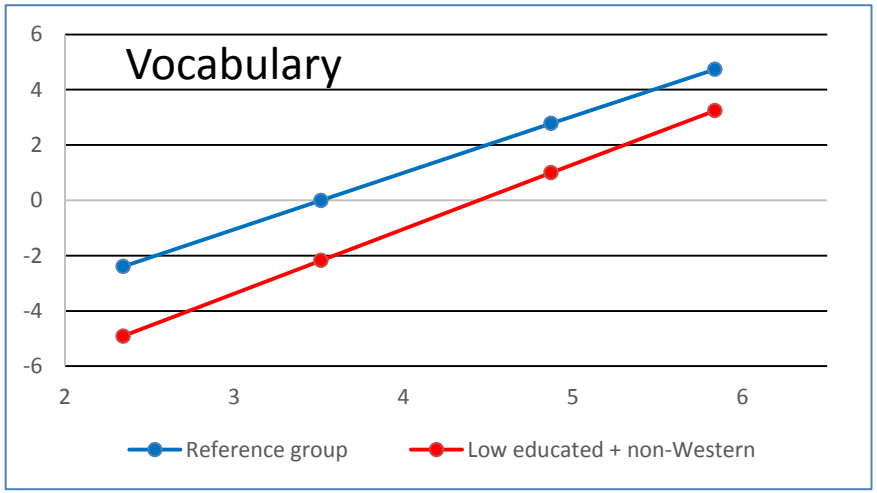


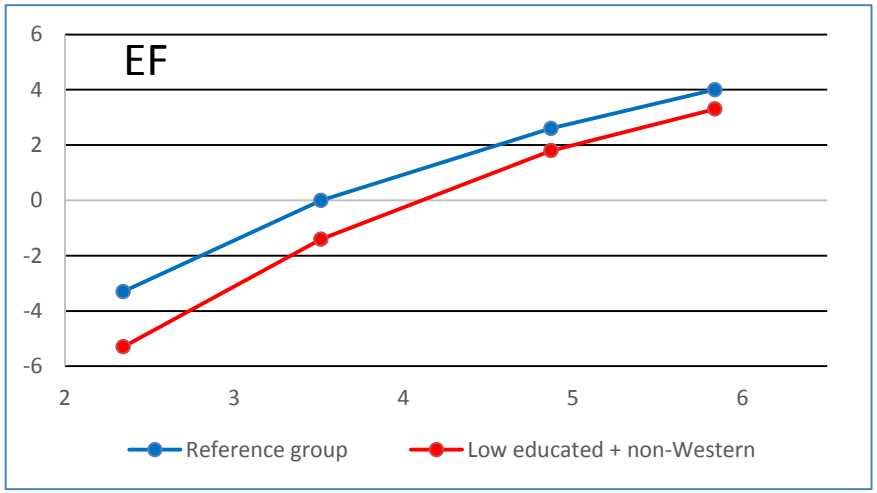


Vocabulary development in early childhood: *what if we would do nothing?*

- Increasing disparities if no, or low-intensive and low-quality, preschool is attended (Cohen's d_{incr} = .22 to .32), likely due to continuous effects of SES and the Home Learning Environment.
- Farkas & Beron (2004), using data from a large scale cohort study (N≈ 5000): increasing disparities until age 5 – then no further widening of the gap due to the start of universal kindergarten, **but also no decrease**.

Development of vocabulary and executive function from 2- to 6-years



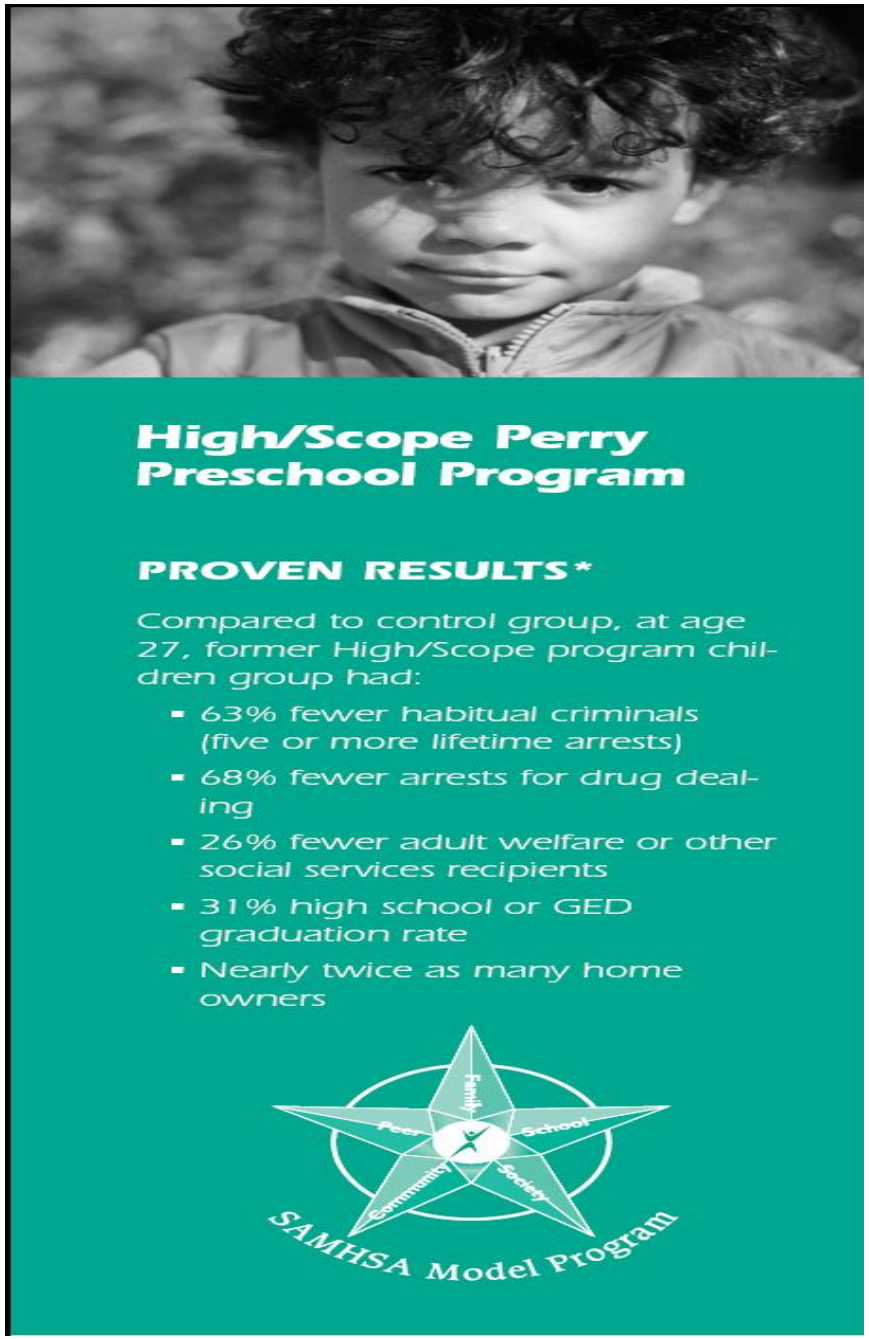


- All children attended ECEC of average to good quality.
- Comparing disadvantaged children with non-disadvantaged reference group reveals significant catching-up effects.
- Cohen's *d* = .7 and .8 (based on average SD).

Leseman et al. (2017)

Heckman (2006)

"High quality early childhood education and care provides one of the few effective policy means of increasing social and economic opportunities for disadvantaged (ethnic minority) communities and, therefore, for society as a whole."



Perry Preschool 1960s, Michigan

Follow-up age 40

Returns of Perry Preschool at age 40

(Barnett, 2000; Belfield et al., 2006)

- **Targeted program**, very poor disadvantaged population.
- Costs per child of the three-year Perry Preschool programme (1995 prices):
- $ 13.000

- Estimated public benefits (discount rate 3%):
  - Returns from income tax child: $ 33.000
  - Savings on police and justice system: $ 75.000
  - Savings decreased use of special education: $ 7000
  - Minus: costs prolonged education: - $ 600
- Total: $ 114.000
- **Return rate: 9 : 1**

Returns of Perry Preschool

(Barnett, 2000; Belfield et al., 20

Interest rate of borrowing the money to invest from the national bank

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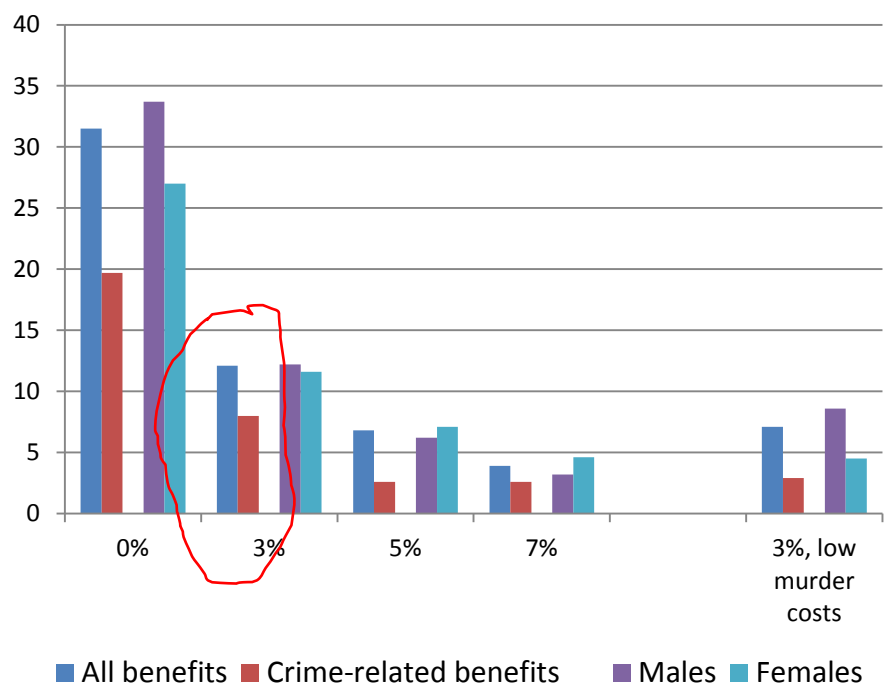
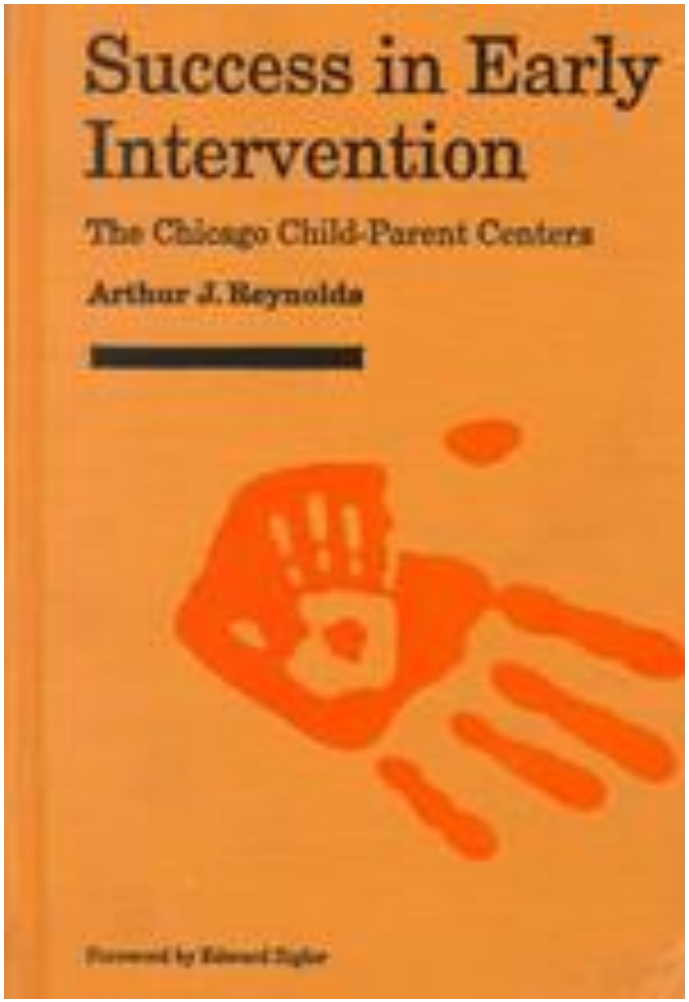
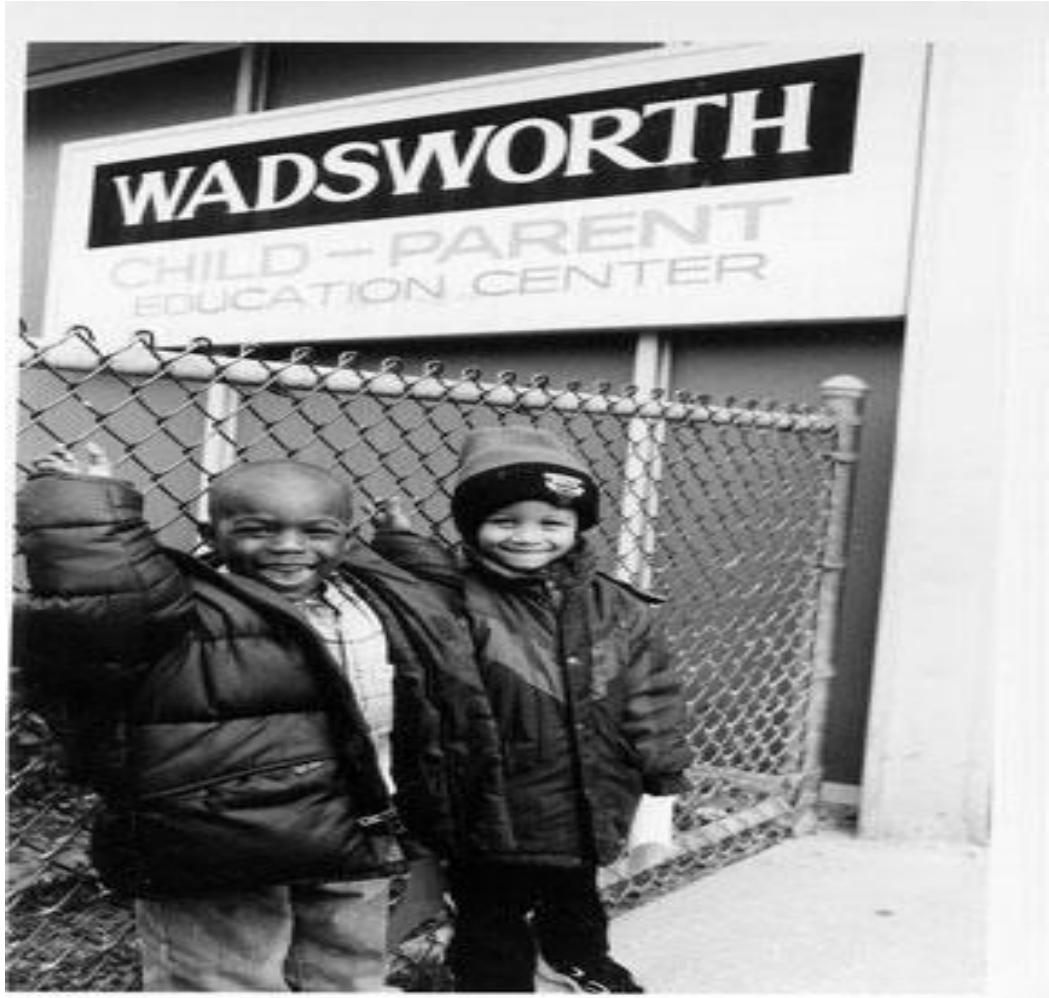
Reanalysis by Heckman et al. (2010)



- More sophisticated measures of savings on crime (distinction between high and low costs of murder ☺)
- New lifetime earnings and welfare dependency estimates.
- Different discount rates (0% to 7%).
- Return rate: **12 : 1**

Chicago Child-Parent Centers





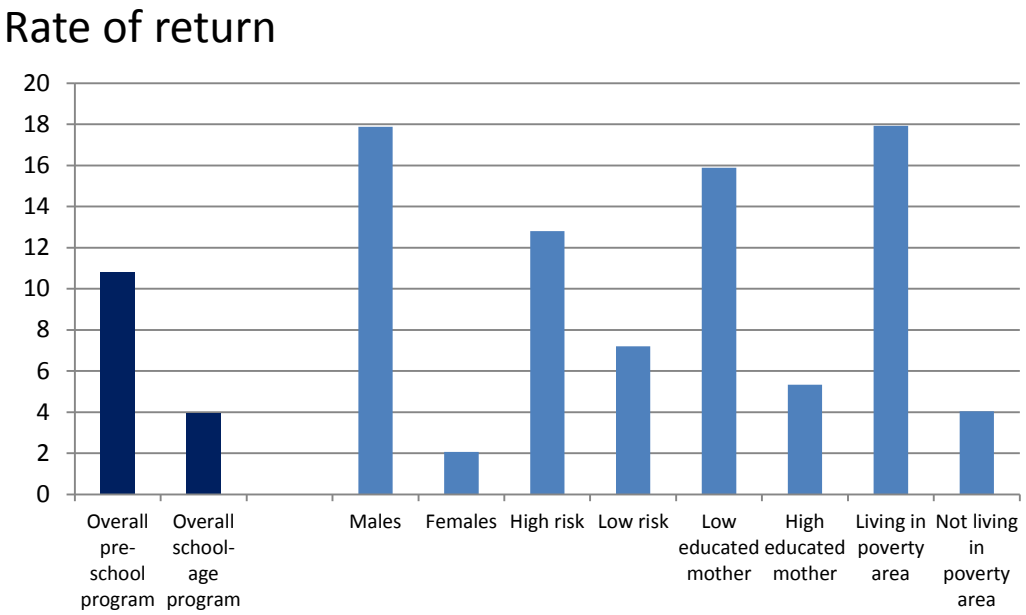
Returns of the Chicago CPC project

(Reynolds et al., 2002)

- Pre-school, school-age and combined program, along with parent-focused intervention.
- **Targeted to a disadvantaged population**.
- Costs per child of the three-year half-time educational pre-school with parent coaching and family support (1998 prizes):
- $ 6.692 per child.
- Estimated public benefits per child at age 21 (discount rate 3%):
  - Returns from income tax per child: $ 27.760.
  - Savings on youth care, justice and police: $ 14.027.
  - Savings on class-retention and referral to special education: $ 6.529.
  - Minus: costs for prolonged education: -$ 186.
- Total: $ 48.130.
- **Return rate: 7 : 1**

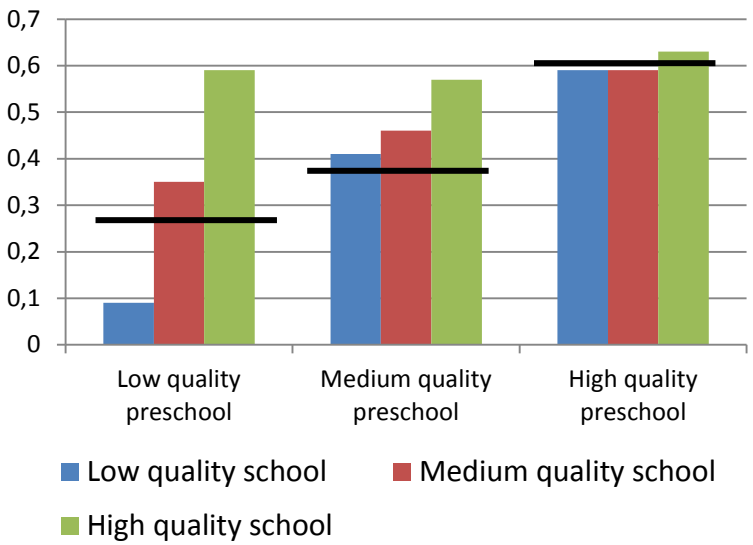
Follow-up at age 26 of full sample

(Reynolds et al., 2011)



- Effects on personal-social outcomes are sustained, overall return rate now: **11 : 1**.
- Comparisons of pre-school and school-age program: preschool program higher return.
- Differentiation by background: higher risk, higher return.

EPP(S)E general population study in England: ages 12 and 16 achievement



Cattan, Crawford & Dearden (2013)

Estimated benefits for society:

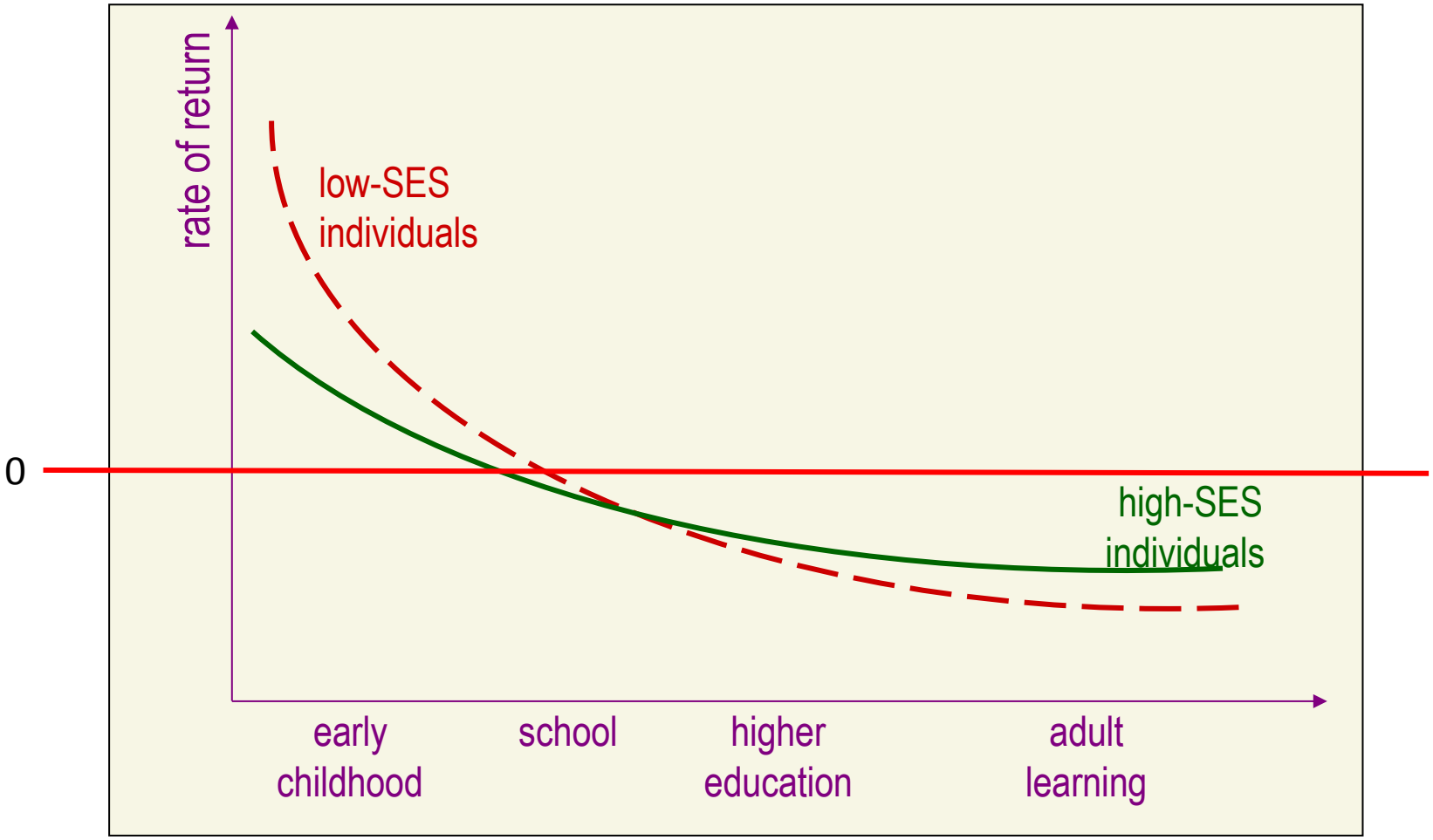
- Earnings via income tax and savings because of less use of care/welfare.
  - Some form of ECEC use vs. no form of ECEC → £ 23.500.
  - Low quality vs. high quality ECEC → £ 15.000.
- Costs of a two-years half-day education program ≈ £ 8,000? (my guess) → return = **3 : 1**
- Difference in costs between low and high quality ≈ £ 4000? (my guess) → return rate = **4 : 1**
- **This is about a universal system and benefits for the general population.**

LOGSE preschool reform Spain

(Duhms, van Huizen & Plantenga, 2016)

- In the early 1990s, the enrolment age was lowered from age four to age three, along with quality improvement, in a universal preschool system.
- Comparing age-cohorts revealed significant increases in PISA-scores at age 15 - **larger for children with low-SES background** (Felfe et al., 2014).
- Costs of the reform per child in 1997: € 3350.
- Total benefits for society:
  - Mothers: wage gains in short term, career effects.
  - Children: school achievement, employment and wages.
  - Tax payers: less retention, less welfare dependency, higher income tax revenues (between a quarter to a half).
- Estimated return rate: **4 : 1** (universal system).

Rate of return by phase of education and social background

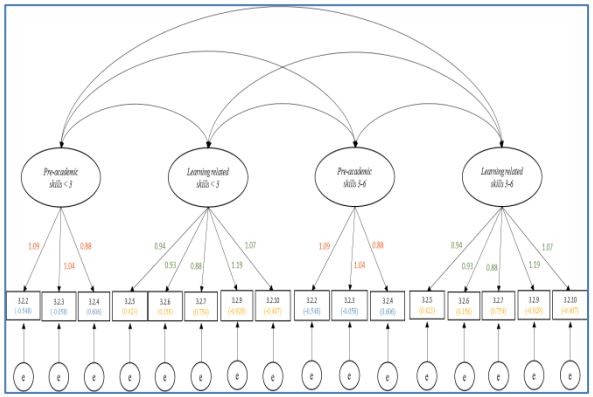


Source: Wössmann et al., 2006 – based on Cunha, Heckman et al. (2006)

Not rocket science…

- Assumptions, selection of benefits (data availability), unequal distribution of benefits,….
- Critical link in the chain of reasoning: the type of skills measured to estimate social-economic benefits of ECEC:
  - PISA-literacy: relatively weak relation with income and other economic measures of interest.
  - New skill demands: how to enter these in the equations?
- Critical link also: ECEC quality and the relation between quality and both immediate and long-term outcomes:
  - Traditional ('pre-academic') curriculum content *vs.* child-centredness and play-based?
  - Group size? Preservice training level? More complex configurations?

Views of parents and educators on important competences



Intercepts, variances and factor loadings of items are constrained to be equal across age-ranges and countries in a multi-group comparison. Model fit is evaluated and found satisfactory.

- Personal interviews and internet-based survey among 3400 parents and 3200 educators in 9 countries.
- It is possible to model parents' and educators' views regarding developmental and learning goals with full measurement equivalence across age-ranges and countries.
- **We apparently have a shared language for expressing our views.**

Broekhuizen, Moser, Melhuish, Pastori et al. (2015)

CARE
Curriculum and Quality Analysis and Impact Review of European Early Childhood Education and Care

Emerging goals for curricula

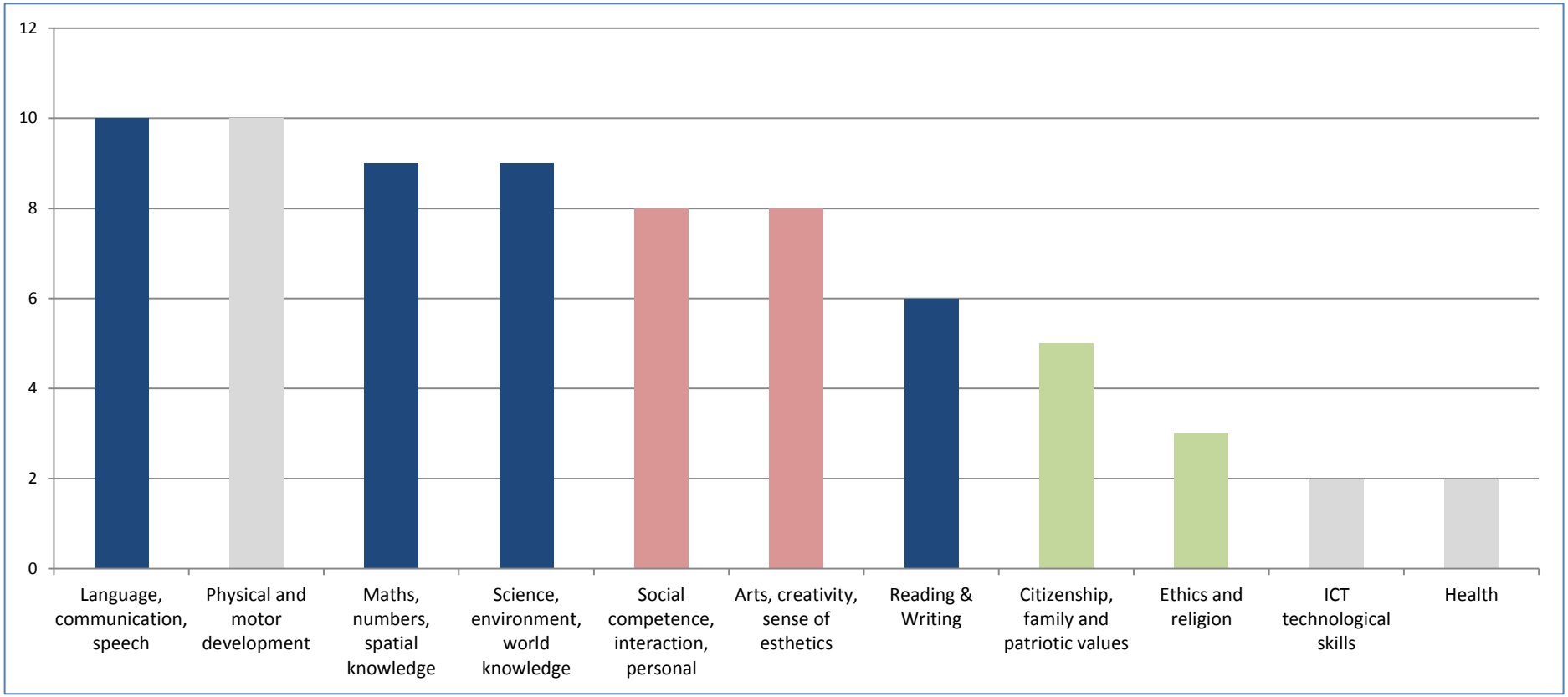
- Physical, fine-motor and creative competence:
  - Has physical endurance, motor skills, engages in physical play & dance.
- (Pre-)academic competence:
  - Has basic knowledge of reading, writing, numbers, shapes.
- Learning-related skills:
  - Can express ideas, ask questions, reason about world, make plans.
- Personal openess to (broadly defined learning) experiences:
  - Is open-minded to new things, persistent, enthusiastic, self-confident.
- Emotion-regulation competence:
  - Can express feelings, control emotions, is aware of others' feelings.
- Interpersonal-relational competence:
  - Is able to interact, show respect, solve conflicts, share, understand rules.
- Positive attitudes towards diversity:
  - Cares for handicapped children, is interested in other cultures.

Parents' views & existing curricula

- Parents emphasize goals for development and learning such as *openness to learning experiences, curiosity, creativity, self-consciousness, self-regulation* and *interpersonal social skills* more than academic skills.
  - Parents with immigrant or low-education background value pre-academic skills more *but do not value soft skills less*.
- European curriculum guidelines are well elaborated regarding pre-academic 'hard' skills, but less well articulated regarding 21st century 'soft' skills.
- Limited ideas about developmental goals for the 0- to 3-years age range.

Sylva & Ereky-Stevens, 2014 (D2.1)
Broekhuizen, Moser et al., 2015 (D6.2)

Mentioned most in European curricula



Dominance of 'hard' academic skills over 'soft' social-emotional skills

Sylva et al. (2014)

Structural quality: systemic approach

EPP(S)E, England

BiKS, Germany

Pre-COOL, Netherlands

First Steps, Finland

Context-Transition, Portugal

- Five large scale studies, using similar structural and process quality measures.
- No clear overall main effects of single structural quality aspects (e.g., group size, child-staff ratio, pre-service training).
- Significant interaction and moderator effects - **structural factors act as *ensembles***.
  - Unfavorable ensembles of structural quality characteristics in 20%-50% of the classrooms with disadvantaged children.
- Important moderators: in-service **professional development** (center-level) and **targeted policy** (state level).

CARE
Curriculum and Quality Analysis and Impact Review of European Early Childhood Education and Care

Slot, Leseman & Lerkkanen (2015)

Configurations of structural and organizational quality

- Survey among leaders of 120 centers of child day care, playgroups and pre-Kindergarten education for 0-4 year olds in a hybrid public-private market.
- Survey among 379 educators (nested within centers) on work satisfaction and related measures, observations of classroom quality in 115 of the 120 centers.
- Analysis at the **organization level** (cf. Mintzberg, 1983):
  - Size and legal form of the organisation (e.g., for-profit vs. non-profit).
  - Leadership (mainly central-educational vs. decentralized-managerial).
  - Systematic professionalization and teamcohesion.
  - Outreach to 'difficult-to-reach' target populations.
  - Flexibility of contracts, opening hours, use of days.
  - Mission and external profile.

Van der Werf, Slot & Leseman (2017)

Clusteranalysis → organization types

(managers' reports)

	1 Engaged professional organizations (mainly half-day programs) ($N_{organizations}$=41)	2 Small client-centered organizations (mainly full-day child care) ($N_{organizations}$=19)	3 Large, multi-location for-profit organizations (full-day childcare) ($N_{organizations}$=30)	4 Large conglomerates of professional organizations (mainly half-day programs) ($N_{organizations}$=30)
Size	medium	small	large	large
Legal form	non-profit foundation	mixed	for-profit company	mixed
Leadership	central, educational	decentral, mixed tasks	decentral, mixed tasks	mixed
Flexibility of contracts	low	high	high	high
Outreach to parents	high	low	medium	medium
Professionalization	high	low	low	medium
Teamorientation	high	low	low	low
Client-centered profile	medium	high	high	low
Educational profile	high	low	low	low
Creativity profile	high	medium	high	low
Inclusiveness profile	high	low	low	low
Small scale profile	medium	high	low	low

Structural quality

(educators' reports)

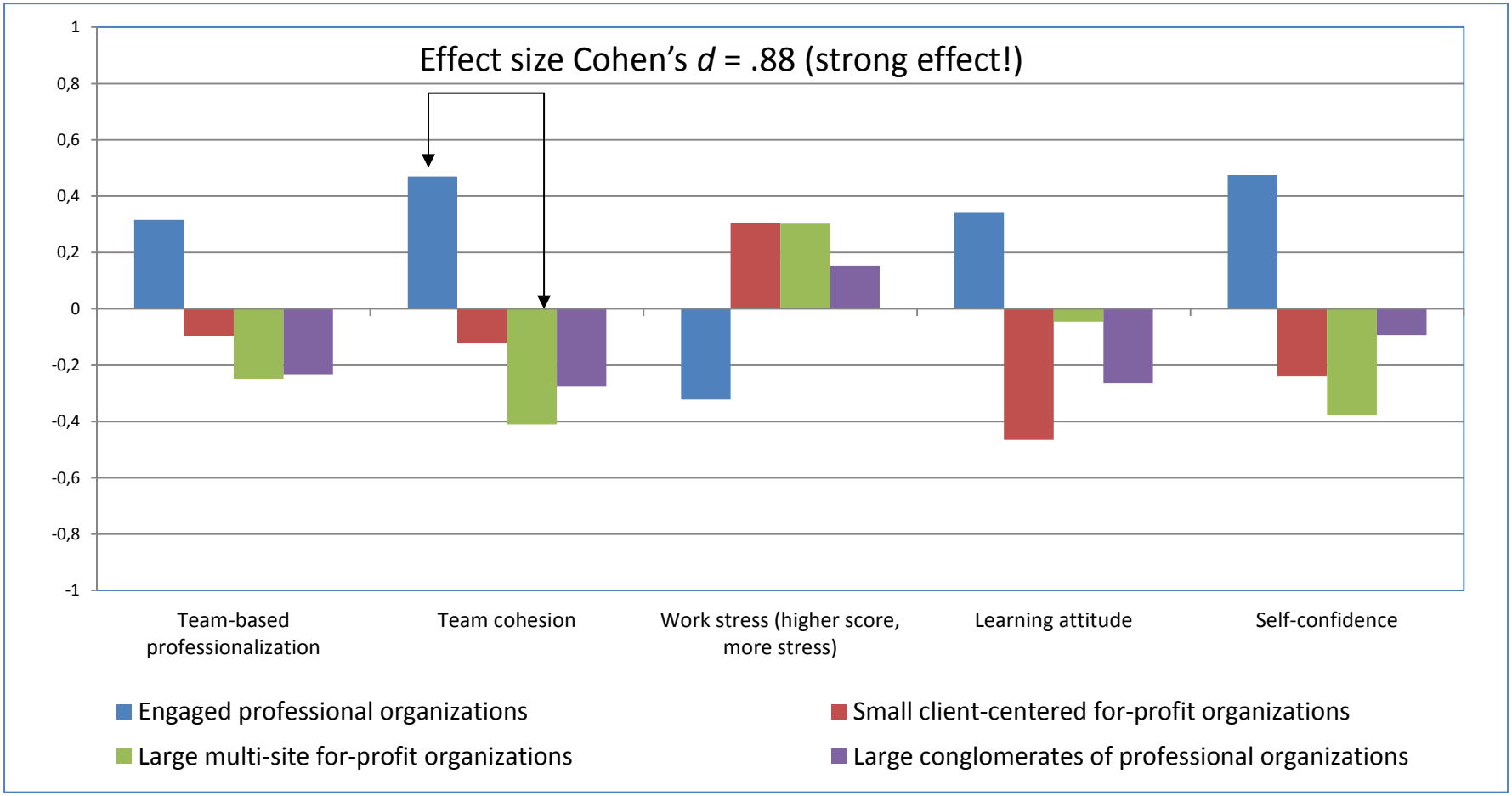
	1 Engaged professional organizations (N_{staff}=118)	2 Small client-centered organizations (N_{staff}=80)	3 Large-scale multi-site for-profit organizations (N_{staff}=106)	4 Large conglomerates of professional organisations (N_{staff}=75)
Group size (nominal)	14.5	14.4	13.9	14.7
Children-to-staff ratio	5.8	5.6	5.6	6.3
Average % staff with migration background	12 %	8 %	4 %	7 %
Average % children with migration background	46 %	29 %	23 %	48 %
Use of an accredited educational program[1]	66 %	51 %	44 %	62 %

[1] Indicating that public subsidy was received for working with disadavantaged children

- No differences in traditional structural characteristics (focus of statutory quality regulation)
- Differences in diversity of clients and staff

How educators experience the job

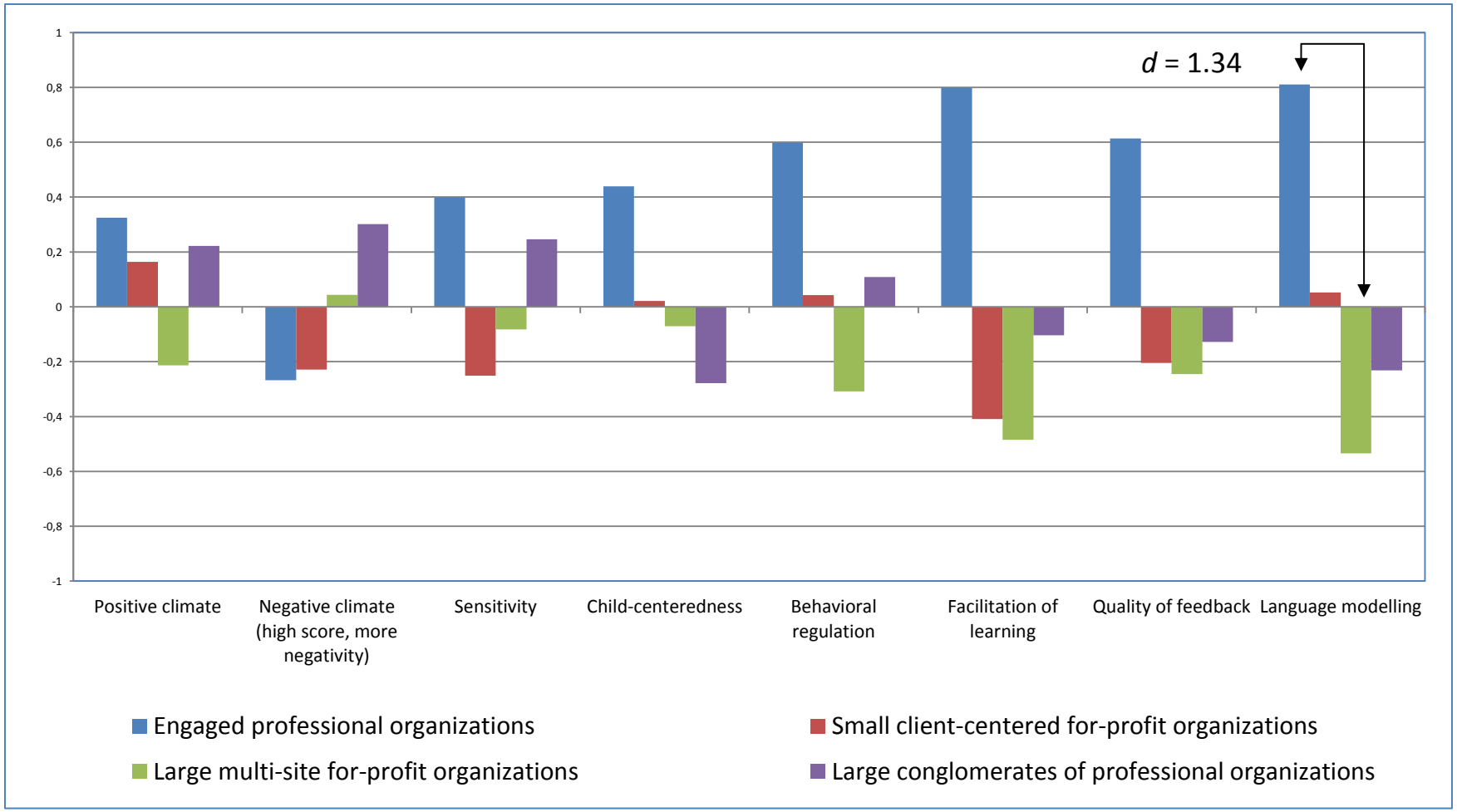
(educators' reports)



Z-scores aggregated to the organization level

Process quality (CLASS)

(observations by researchers)



To think about…

- In a hybrid, partly public and partly private ECEC sector, different types of organizations emerge.
- The engaged, modern professional organization (client-centered *and* social-educational mission, education *and* holistic development profile, systematic professionalization, inclusiveness, non-profit,…) is in virtually all areas of interest superior.
- How can countries govern their ECEC system to obtain optimal public functioning?
- Is the *socially engaged, not-for-profit enterprise* an organization model for other sectors as well?

To conclude

- The evidence for the effectiveness and economic benefits of high quality ECEC is compelling.
- No one knows exactly what the future will bring, but it is likely that in addition to traditional academic skills, new skills will be required – self-regulation, learning to learn, creativity, curiosity, collaboration, empathy…..
- We need a research & development agenda to prepare European ECEC for the near future, focusing on curriculum development to optimally serve new skill demands, new assessment tools for quality and outcome monitoring, new governance strategies, …..