

THE EXPECTED EFFECTS OF THE MEASURES ON EARLY CHILDHOOD CARE AND EDUCATION: SOME ELEMENTS OF LITERATURE¹

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The early childhood components of the National Strategy for the Prevention and Fight against Poverty can be summarized in two sets: one aims to facilitate access to child care for disadvantaged children and the other aims to improve the quality of child care. With these two types of actions, the Strategy is betting that the children who benefit from them will pursue a more favourable trajectory of cognitive and socio-emotional development and will be able, at the end of a complex chain of consequences and actions, to emerge from a pattern of social reproduction and thus be better integrated into society in adulthood.

The international academic literature is abundant on the theme of the relationship between early intervention and child development. In this note, we review a number of research studies - all published in peer-reviewed journals or working papers that we consider to be of high quality - and syntheses examining the link between formal childcare arrangements and the development of skills and educational success of young children, particularly those from disadvantaged backgrounds. We also present work on the link between the quality of childcare and child development.

The objective of this work is not to propose a systematic and exhaustive review of the literature but, in a way, to compare the logic model that we have defined in Appendix 12 with the results of research. Some parts of the literature are better covered than others and have been the subject of systematic reviews with (or without) meta-analysis. We then present them with greater assurance than others where - for example, for the effect of childcare before 3 years-old in France - the literature is much more incomplete and where the methodology does not allow us to interpret their results as a causal link.

The remainder of the document is divided as follows: a first section is devoted to the effects of childcare arrangements on children's development, distinguishing between early childhood care (before the age of 3) and preschool care (3 to 6 years old). Next, we

¹ This English version has been translated from French using DeepL. The original version in French is available on France Stratégie's website :

<https://www.strategie.gouv.fr/sites/strategie.gouv.fr/files/atoms/files/fs-comite-evaluation-strategie-pauvrete-annexes-mars-2020.pdf>

examine the link between the quality of childcare and child development by analysing the possible mechanisms and the heterogeneity of the effects that may result.

In conclusion :

The academic literature linking early intervention and child development is abundant and several results emerge in a relatively stable way in the meta-analyses mobilized here:

-Benefiting from quality childcare between the ages of 3 and 6 has positive effects on children's development; these effects are stronger among disadvantaged children and when the systems include an explicit and reinforced educational component.

-Results for younger children are significantly less consensual and appear to be either positive, negative or no effect. However, it seems that the quality of child care is a determining factor in these results, and the studies that identify positive effects generally concern quality child care.

-Higher qualifications for early childhood professionals are correlated with better quality early childhood education and care.

There is little work in France that can attest to the validity of these results in this institutional context due to the lack of data and experiments that would provide more evidence of the effects of childcare.

Does access to formal childcare promote the development of skills and the educational success of young children, particularly disadvantaged children?

²The international academic literature is very abundant on the impact of access to formal childcare, but distinctions must be made. Indeed, most of the works focuses on the effect of programs lasting until the child is 6 years-old, thus including equivalent forms of kindergarten.

² In this text we use the terms academic and scientific research/literature as synonyms, it being understood that the aim here is not to present "expert opinion" but rather research or research syntheses that have all been established following the scientific approach and, with the exception of working papers, have been validated by other researchers. See (Maxim and Arnold, 2012) for a discussion of the distinction between academic research and scientific expertise.

General literature on the impacts of early investments

(Kholoptseva, 2016) presents the results of a meta-analysis based on a systematic literature review on the effect of formal group³ childcare between 0 and 6 years-old in the United States between 1960 and 2005 and shows that the children who benefit from the program have better literacy and numeracy skills that⁴ persist 4 years after the end of the program. When programs have a component explicitly devoted to the development of language or mathematical skills, the effect size increases by an additional half standard deviation. In a literature review published in *Science*, (Barnett, 2011) reports similar effect sizes in the short term and longer-term effects that are always present. These results are found in developed countries and also in developing countries as shown in the meta-analysis of (Nores and Barnett, 2010). However, the literature increasingly separates the results for interventions before 2/3 years-old from those between 3 and 6 years-old. In fact, while the results seem to be convergent for preschool care (equivalent to kindergarten education abroad), the results are more mixed for formal care before the age of 3.

In terms of care after the age of 3, disadvantaged children particularly benefit from a high quality pre-school offer, and more socially mixed groups than homogeneous disadvantaged groups, as attested by the literature synthesis by (Melhuish *et al.*, 2015) published in the framework of the CARE project⁵. A number of interventions showed improvements in cognitive development, but in some cases these benefits did not persist throughout children's schooling. This appears to be due in part to the fact that the subsequent poor school experiences of disadvantaged children outweigh the earlier benefits of a high-quality early education experience. Moreover, recent works highlight a dynamic complementarity between early and in-school investments, or between skills (cognitive and non-cognitive) acquired at different ages⁶. Moreover, early childhood interventions build children's self-confidence and social skills, which provide a better basis for success in school (and later in the workplace).

In France, there is relatively little work on the effects of formal childcare arrangements before kindergarten entry and, since almost all children were enrolled in kindergarten, there are virtually no studies that measure the effects of kindergarten entry. A few studies have looked at whether entering kindergarten in the year the child turns 2 (instead of 3) improves educational success, but the conclusions of these studies are heterogeneous. The study published in *Labor economics* of (Goux and Maurin, 2010) does not identify an effect on the risk of leaving school early; in its synthesis of the literature, (Florin, 2013) reports several psychological studies comparing the development of children in nursery school or kindergarten and does not identify an effect; finally, the working paper by (Filatriau *et al.*, 2013) finds positive effects of early entry into kindergarten on success in

³ Center based childcare.

⁴ From 10 to 35% of a standard deviation.

⁵ CARE is a collaborative project funded by the European Union to address issues related to the quality, inclusion and to individual, social and economic benefits of early childhood education and care (ECEC) in Europe. <https://ecec-care.org/>

⁶(Johnson and Jackson, 2019 ; Lubotsky et Kaestner, 2016)

primary and secondary school, but the paper by (Heim, 2018) concludes the opposite with a similar method but with more recent data⁷.

Effects of formal reception on children under 3 years-old

The research reviewed by (Melhuish *et al.*, 2015) relative to formal childcare in the first three years for disadvantaged children indicates that quality childcare can have beneficial effects on cognitive, linguistic and social development. On the other hand, low quality childcare has no benefits or negative effects. High quality childcare with associated home visits appears to be an effective package of services. The relative quality of formal childcare arrangements compared to parental childcare appears to be key to explaining why, in some cases, childcare appears to be detrimental and in others beneficial. Identifying the relevant counterfactual and assessing its quality are essential to understanding and evaluating the impact of childcare arrangements.

Work on French data is still rare or less able to measure differences that can be interpreted as a causal link.

Two very recent publications, however, provide information on the effects of childcare in France. (Gomajee *et al.*, 2017, 2018) use data from an epidemiological cohort where families are followed from pregnancy to the child's 8th birthday and measures of children's socio-emotional development are collected at different times. By matching children on the basis of a set of socio-demographic family characteristics, the authors compare the development of children who entered daycare with either childcare by a maternal assistant or informal care (parental and others). They then show that compared to informal care, children in crèche have a lower probability of having emotional disorders (Odds ratio between [.17; .95]), problems with other children ([.15; .67]) but a lower propensity for pro-social behaviour⁸ ([.28; .90]). Children cared for by a childminder did not differ in their socio-emotional development from children in informal care except for the fact that they were more likely to engage in problem behaviours ([1.05; 2.81]). Analyses of the heterogeneity of effects show that being in day care for more than one year appears to be particularly effective in limiting socio-emotional disorders. Finally, girls and children from privileged social backgrounds benefit more from the crèche. Like the international literature using these matching methods (Herba *et al.*, 2013), this study therefore indicates that group childcare is linked to much better trajectories of socio-emotional development than those of children cared for by a childminder or informal childcare. However, these analyses, all other things being equal, do not take into account the fact that being in a crèche depends on the wishes of the families and on space constraints, that the second best alternative for each parent is not known and that it is therefore difficult to identify the

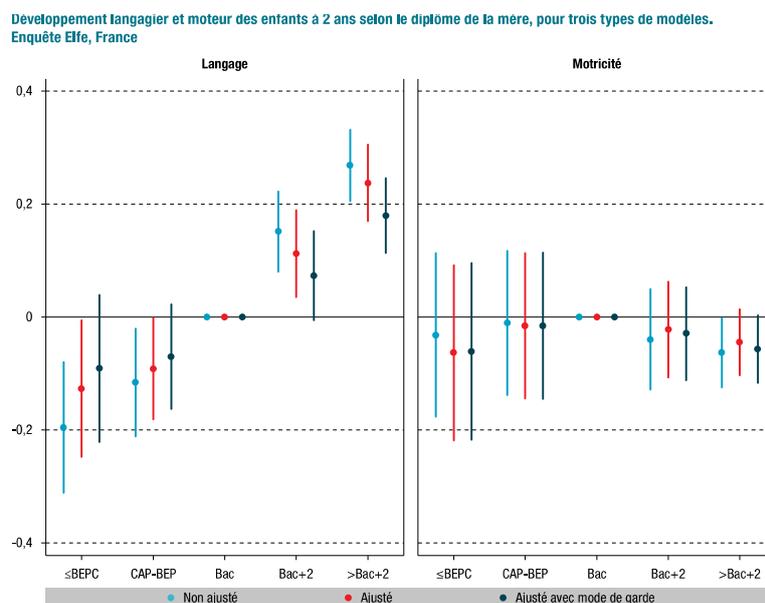
⁷ These two studies use a proxy of access constraints in kindergarten to 2 years old linked to differences between territories as a source of identification by instrumental variable. Filatriau *et al* (2013) use data from the 1997 primary panel and Heim (2018) the 2007 secondary panel.

⁸ Pro-social behaviour refers to actions directed towards others such as helping, sharing, giving, etc. behaviour performed without expecting a quid pro quo.

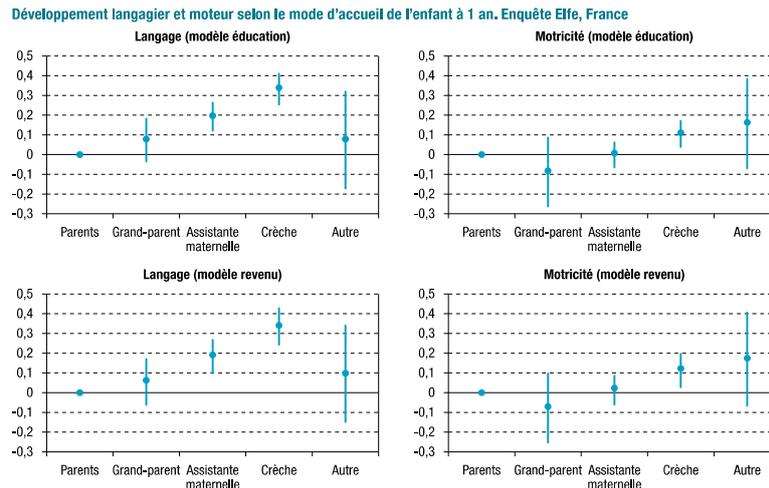
right reference situation and therefore to interpret these results as a causal link⁹. The interpretation is therefore limited to comparing very close children in different types of childcare and to noting significant differences in socio-emotional development, which is already an important result.

A second longitudinal study was launched in 2011 in France: the ELFE cohort produced by INED. Exploitation of its data provide answers on the link between childcare and development. The work of (Grobon *et al.*, 2019) documents inequalities according to social origin and the role of childcare. The figure below shows very significant developmental differences in language mastery at two years-old between children whose mothers have little or a high level of education, even when differences linked to socio-demographic characteristics are taken into account. Moreover, taking into account the child's reception mode greatly reduces inequalities so that there is no longer a significant difference in language proficiency between children of mothers with at most a BEP and children of mothers with a BAC +2. Taking into account the type of childcare reduces the differences in language proficiency associated with social background. The Elfe data do not highlight differences in motor development related to social background.

Figure 1 - Associations between childcare mode and child development in Elfe data from Grobon et al (2019)



⁹ Impact evaluation in the presence of close substitutes complicates identification even under optimal evaluation conditions with random assignment. See in particular (Kline and Walters, 2016).



The association between the different types of childcare and language mastery is shown in the figure above. It can be seen that, compared to parental care, formal childcare is associated with better language development at 2 years-old, all other things being equal. The improvement is stronger in day care than with a childcare assistant. Daycare is also associated with better motor skills, all other things being equal.

These results show that formal childcare at 1-year-old is associated with better language mastery at 2 years-old, but this method of analysis still does not make it possible to attribute this difference to the type of childcare. Indeed, it cannot be excluded that these results are also related to the fact that families with higher potential choose to use one type of childcare rather than another. Solving this problem of selection bias requires an adapted research design that introduces randomness.

Does the quality of childcare influence children's development?

Mechanisms likely to show positive effects of childcare

From a theoretical point of view, it is not clear whether access to formal childcare improves children's skills. This presupposes that the activities, interactions, and ties developed within the childcare setting are of better quality than those with the parents.

The psychological literature has been very concerned about the risks caused by the substitution of parental care by one or more early childhood professionals and has identified negative effects of non-parental care on the parent-child relationship, as well as aggressive and externalizing behaviours (Belsky, 2001). The concept behind these findings is the post-attachment theory (Bowlby, 1958, 1988). However, this literature has not proved to be very robust, especially outside of clinical cases and in population-based studies. Several studies produced in different contexts have not found a link between the "quantity" of non-parental care and measures of social-emotional development (Melhuish *et al.*, 2015). Empirical work on attachment is also inconclusive beyond correlational links,

and in a large study devoted to this issue¹⁰ (Friedman and Boyle, 2008), no association was found between the quantity or quality of the childcare and attachment.

An economic vision of the process leads to consider early childhood care as an investment in human capital that manifests itself through the acquisition of new skills in different areas. (Cunha and Heckman, 2007) propose a theoretical model of human capital accumulation that incorporates complementarities between the different types of skills acquired at one point in time, and dynamic complementarity, meaning that skills acquired before a new investment in human capital increase the productivity of that investment. Thus, a child entering school with high cognitive and socio-emotional abilities should benefit more from school than a student with less developed initial skills.

Two recent publications test these theoretical predictions: one (Johnson and Jackson, 2019) assesses the dynamic complementarity of human capital investment by comparing the adult outcomes of cohorts that were exposed differently to changes in public education spending between kindergarten and junior high school, depending on place and year of birth. Using instrumental variable methods and sibling differences, they show that the effects of *Head start*¹¹ on wages are larger when students had access to better-funded schools, and the effect of increased resources at school is larger when students had benefited from *Head start* before. On the other hand, (Lubotsky and Kaestner, 2016) document the complementarity between cognitive and non-cognitive skills in a model that uses kindergarten entry age as a source of identification. Their results indicate that children who are older and more competent because of their date of entry at school - which is function of their date of birth - progress more rapidly than younger children in cognitive dimensions, but not in non-cognitive dimensions. Once in school, however, there are no longer differences in progress between younger and older children.

The predictions of Cunha and Heckman's model thus come up against empirical results showing either early investment effects that dissipate (*fade out*) or remain latent (*sleepers effect*). Several explanations are generally put forward to explain this apparent contradiction. According to Hojman's working paper (Hojman, 2015), the difference between the children benefiting from quality programs and the others is narrowing, in particular because the control group benefits more from school, reflecting a catch-up effect rather than a dissipation effect. It is also possible that the relatively poorer quality of elementary school compared to early childhood programs may cause the advantage of the students who benefited to disappear.

Heterogeneity of effects depending on the audience and the type of childcare

¹⁰ Data of the National Institute of Child Health and Human Development Study of Early Child care and Youth Development.

¹¹ Head Start is a program of the U.S. Department of Health and Human Services that provides comprehensive early childhood education, health, nutrition and parenting support services for low-income children and families.

The relative quality of formal child care arrangements compared to parental custody seems essential to explain why, in some cases, child care seems detrimental and in others beneficial. Identifying the relevant counterfactual and assessing its quality are essential to understanding and evaluating the impact of child care arrangements.

A first wave of literature uses conditional independence methods (mainly *matching*) and finds that formal childcare reduces developmental inequalities, improves cognition and academic performance (Geoffroy *et al.*, 2007, 2010) ; and reduce short-term emotional and social disorders (Herba *et al.*, 2013) up to adolescence (Laurin *et al.*, 2015).

However, the risk of selection bias due to unobservable characteristics leads one to be cautious about the validity of these results, especially since studies that are better able to manage this type of bias have significantly different conclusions.

The most recent articles exploit more rigorous research designs and point to what appears to be a consistent finding: formal childcare arrangements can have a positive impact especially (if not only) for disadvantaged children, and provided care is of good quality.

Indeed, on the one hand (Felfe and Lalive, 2018) exploit the massive but heterogeneous deployment of early childhood facilities following the Landers in Germany and find positive impacts on motor and socio-emotional abilities particularly important for low-income families. (Drange and Havens, 2015) exploit the randomness of the algorithm used to allocate daycare spaces in Oslo, Norway, and find a positive average effect of daycare on reading and mathematics achievement at age 7, with these effects being greater for children from low-income families and zero for children from high-income families.

On the other hand, a body of research has identified negative impacts for some children in child care. In particular (Baker *et al.*, 2008) analyze the universal extension of child care services in Quebec in the late 1990s and identify negative impacts on children's behaviour. But (Kottelenberg and Lehrer, 2016) re-analyze these results and show that these negative mean estimates hide a positive effect on the least advantaged members of this population. (Herbst, 2013) uses the drop in attendance at summer childcare facilities as a source of variation in the use of childcare facilities and finds a mainly high negative impact on well-off children. The impact on low-income families is almost nil and insignificant.

(Bernal *et al.*, 2019) analyze the results of a randomized controlled trial allowing families to move from an individual non-parental child care arrangement (nursery assistant type) to a group setting and document negative effects on cognition and no effect on social-emotional skills. They explain these results by the low quality of the collective childcare arrangements considered. Finally, (Ichino *et al.*, 2019) exploit the discontinuity induced by the algorithm used to allocate childcare services in Bologna (Italy) and identify a negative impact of a collective type of childcare on children between 8 and 14 years old. These results concern children in the marginal group whose admission depends on constraints and other demands. These families are on average composed of two parents who both work. Consequently, they concern the rather well-off families. They do not concern families with higher priority or special needs. In addition, the Bologna day care centers have a ratio

of 1 adult for every 4 children under 1 year old, 1 for every 6 between 1 and 2 years old, whereas in Norway the ratio is 1 for 3.

Thus, the evidence is mixed, but consistent with the idea that families are affected differently depending on the type of childcare because they replace parental or informal care, the quality of which may vary, but at a moment of child development when adult-child interactions are crucial.

Quality of childcare and child development.

(Bailey *et al.*, 2017) make interesting arguments about the conditions necessary for early interventions to have a lasting effect. For the authors, persistent effects require action on skills, behaviours, abilities that share three characteristics. They must be :

- malleable enough to be affected by the intervention,
- essential to success, and above all,
- In the absence of intervention, they should not spontaneously develop in the counterfactual situation.

The systematic review of (Manning *et al.*, 2017) published by *Campbell collaboration* shows that there is a significant correlation between higher qualifications of early childhood professionals (teachers, educators) and better quality of early childhood education and care, as measured by the Environmental Rating Scale. There is also a positive correlation between teacher qualifications and scores on subscales such as curriculum structure, language, and reasoning.

However, this work is only correlational and identifies the effects of initial training and not of continuing education, which is significantly different. Contrary to these results, the systematic review of (Filges *et al.*, 2019) does not identify any effect of the continuing training of social workers on the skills of those they accompany¹².

Finally, the research synthesized by (Melhuish *et al.*, 2015) shows that the following quality parameters are important for improving child development:

- Adapted, affectionate and easily accessible adult-child interaction
- A well-trained and committed staff in its work with children
- Safe, healthy and accessible facilities for parents
- Adult/child ratios and group sizes that allow staff to interact appropriately with children
- Supervision that maintains consistency
- Staff development that ensures continuity, stability and quality improvement

¹² This review does not focus specifically on training for early childhood professionals, but for all social workers, teachers, etc. However, the majority of the studies selected focus on interventions with kindergarten and nursery school teachers.

- A developmentally appropriate curriculum with educational content.

To promote better outcomes, the ECEC should be characterized by both quality structural features and ongoing staff support to ensure that children's immediate experiences, those provided by activities and interactions, are of high content and stimulation.

Conclusions

The academic literature linking early interventions and child development is abundant and several results emerge in a relatively stable manner in the meta-analyses mobilized here:

- **Benefiting from quality childcare between the ages of 3 and 6 has positive effects on children's development; these effects are stronger among disadvantaged children and when the systems include an explicit and reinforced educational component.**
- **Results for younger children are significantly less consensual and appear to be either positive, negative or no effect. However, it seems that the quality of child care is a determining factor in these results, and the studies that identify positive effects generally concern quality child care.**
- **Higher qualifications for early childhood professionals are correlated with better quality early childhood education and care.**

There is little work in France that can attest to the validity of these results in this institutional context due to the lack of data and experiments that provide more evidence of the effects childcare.

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