

Childcare choices and child development

Generous parental leave and affordable, high-quality childcare can foster children's abilities

Keywords: child outcomes, childcare, early education, household choices

ELEVATOR PITCH

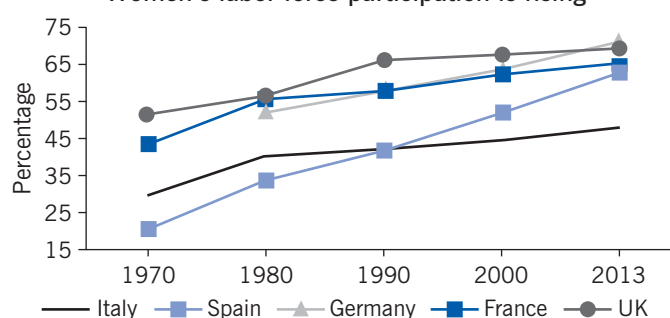
The economic and psychological literatures have demonstrated that early investments (private and public) in children can significantly increase cognitive outcomes in the short and long term and contribute to success later in life. One of the most important of these inputs is maternal time. Women's participation in the labor market has risen rapidly in most countries, implying that mothers spend less time with their children and that families rely more on external sources of childcare. This trend has raised concerns, and an intense debate in several countries has focused on the effectiveness of childcare policies.

KEY FINDINGS

Pros

- + Mothers' (and fathers') time is a crucial input in child development, especially when parents are highly educated.
- + Making high-quality early childcare more available to low-income households can promote efficiency and reduce inequality.
- + Parental leave and other policies that enable parents to spend more time with their children can improve children's abilities.
- + Compared with informal childcare, formal childcare may improve child outcomes, such as school readiness and problem-solving, especially for low-income children.
- + Childcare programs directed to children in low-income families can affect child outcomes in the short and long term.

Women's labor force participation is rising



Source: Calculations based on Key Indicators of the Labour Market.
 Online at: http://www.ilo.org/empelm/what/WCMS_114240/lang--en/index.htm

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Cons

- Expansion of parental leave may not significantly affect some child outcomes in the long term (average years of schooling and wages).
- Compared with care by parents, some evidence suggests that formal childcare may negatively affect children's vocabulary and behavioral and social skills, increasing anxiety and aggressive behavior.
- Few studies have used direct measures of parents' time with their children to examine the relationship between parental investments and children's cognitive development.
- Children receiving informal care from grandparents were less prepared for school than children in formal childcare.

AUTHOR'S MAIN MESSAGE

Child development is the outcome of inputs from parents, formal and informal childcare providers, and schools. Especially when children are young, mothers' and fathers' care is the most valuable input. When both parents work, formal childcare is the best substitute, especially for children in low-income families. Informal childcare seems to contribute less to child development. Consequently, generous parental leave policies as well as policies that promote affordable and high-quality formal childcare are likely to have a positive impact on children's abilities and outcomes in the near and long term.

MOTIVATION

In the last few years, women's labor market participation has grown worldwide. As a result, household income has increased, along with women's independence, so has the number of children enrolled in formal and informal childcare, as mothers' time with children has declined.

However, while women's labor force participation has increased in most countries, the availability of external childcare has remained low, and its quality varies considerably, especially for children under the age of three. In response, policymakers are directing increased attention to promoting the greater availability and improved quality of formal childcare.

Given the importance of early investment in children's development, an intense debate has focused on the availability and quality of childcare services as a crucial substitute for maternal time. This paper focuses on experience with childcare options in English-speaking countries (the UK and the US), northern European countries (Denmark and Norway), and central and southern European countries (Italy and Germany).

DISCUSSION OF PROS AND CONS

While enrollment in formal (public and private) childcare is more than 60% in almost all EU countries, enrollment is much lower for children under the age of three and varies considerably across countries (Figure 1). Government spending in this area is highest in Denmark, the Netherlands, and Sweden, where more is invested in early education, and much lower in Italy, Spain, the UK, and the US.

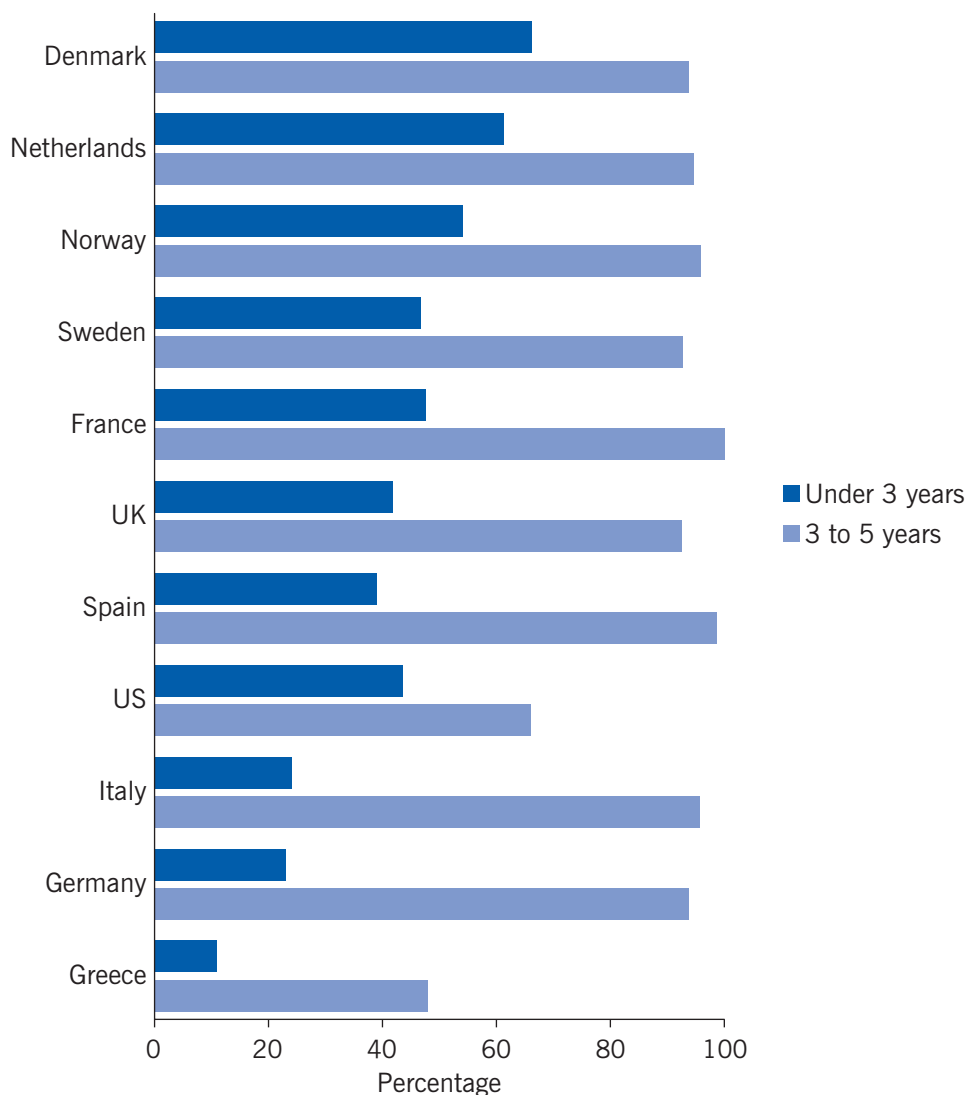
While the share of enrollment in formal childcare is smaller for children under three years old, that share has been rising in most countries. Of the countries reviewed here, enrollment has always been highest in Denmark and Norway, where it is mostly public; somewhat lower in the UK and the US, where it is mostly private, and in Spain, where it has increased after recent reforms; and much lower in Germany and Italy, where childcare is mostly public but highly rationed (Figure 2).

The theoretical approach to child development

A seminal contribution to the economic approach to child development establishes a framework in which child development is the outcome of a production function in which families as well as schools are the primary actors [1]. More specifically, in this production function framework, child development is a dynamic process, and the outcome is determined by heritable endowments and the sequence of endogenous inputs, which depend on parental choice and are therefore correlated with parents' characteristics. Family inputs are the most important in the first few years of a child's life, since cognitive and non-cognitive outcomes are largely determined early. High-quality childcare programs can substitute for parental time when parents are at work and, like parental care, can also improve cognitive and non-cognitive outcomes, especially for children from more disadvantaged backgrounds.

In this child development framework, cognitive and non-cognitive skills are equally important in explaining several short- and long-term outcomes. Non-cognitive skills

Figure 1. Enrollment in formal childcare or early education varies by age and country, 2008



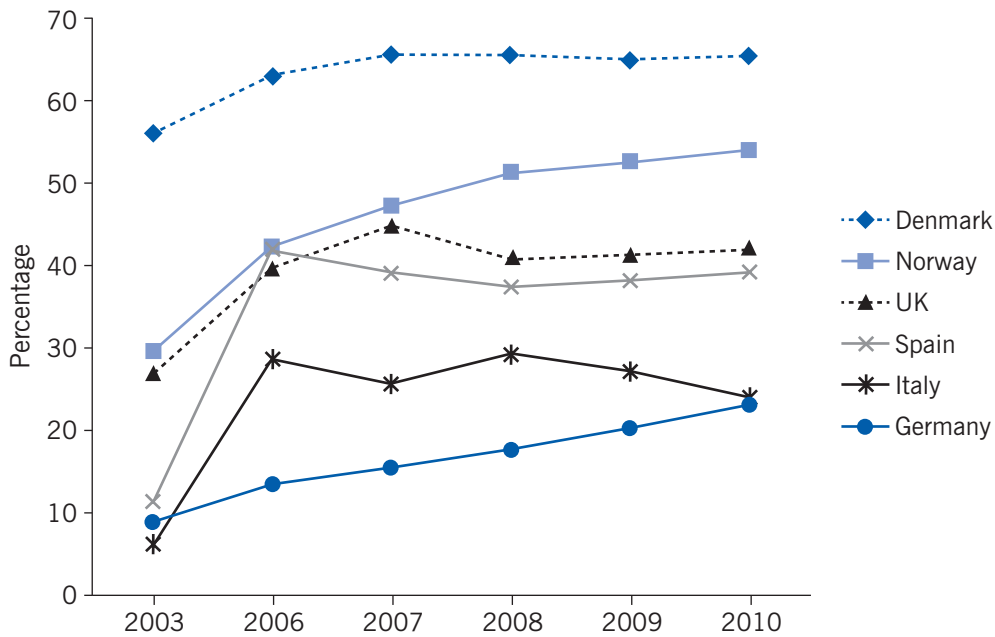
Source: Calculations based on data from the OECD Family database (Public policies for families and children: Formal care and education for very young people). Online at: <http://www.oecd.org/els/family/database.htm>

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(motivation, attention, perseverance, self-confidence) help a child acquire cognitive skills [1]. In terms of timing, interventions are more effective when children are young and their skills are more “malleable,” while interventions by the time children have become teenagers or young adults are often both expensive and ineffective. The effects of investments at early stages of child development are cumulative over the lifetime of the child, and both contemporaneous and lagged inputs are important. Thus, early interventions have higher rates of return than later interventions.

The potential impacts of early child investments have important policy implications. If families and institutions intervene early enough, they can positively influence a child’s cognitive skills, socio-emotional abilities, and health in the short and long term. Early interventions can improve schooling and labor market outcomes while reducing negative outcomes such as unemployment, drug use, crime, and teenage pregnancy. Early investments, such as making early childcare more available and affordable for

Figure 2. The enrollment rate of children under age three in formal care varies considerably by country



Source: Calculations based on data from the OECD Family database, 2014 (Public policies for families and children: Formal care and education for very young people). Online at: <http://www.oecd.org/els/family/database.htm>; US data are only available for two years and so are not included.

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low-income households, can also promote efficiency and reduce inequality. These hypotheses have been tested in several recent studies focusing on US and European data, as discussed below.

Cognitive and non-cognitive child outcomes

Cognitive outcomes refers to ability in areas such as literacy and numeracy (usually measured by test scores), grades, drop-out rates, average years of schooling, employment, career achievements, and wages.

Non-cognitive outcomes refers to a set of attitudes and behaviors that can contribute to cognitive outcomes, including motivation, perseverance, self-control, resilience, and creativity.

The empirical literature on child development

The role of parental care

Several recent studies (for the UK, the US, Germany, Denmark, and Norway) have used this theoretical framework to focus on the impact of parental inputs on child outcomes. The results are often mixed for the size of the impact and whether it was positive or negative. In part, these differences reflect differences in the model being analyzed, including measures of parental inputs, types of caretaking examined, and child outcomes considered (cognitive or non-cognitive).

Most socio-economic surveys lack appropriate measures of parental time spent in childcare and so researchers have been forced to use proxy measures, such as mothers' employment. For example, in a 2008 analysis of the impact of US mothers' time on child cognitive outcomes, using data from the National Longitudinal Survey of Youth, mothers' time at work was considered to be equal to the time not spent with the child [2]. The estimation results indicate that when a child is quite young, a mother's time in employment and a child's time in formal childcare have a large negative impact on the child's test scores on standard cognitive ability tests at the time of entry into formal schooling.

A more accurate measure of parents' time investments in children is provided by time diary surveys, which usually contain detailed information about the amount of time parents spend engaged in various activities with their children. Very few studies have used direct measures of parents' time with their children to examine the relationship between parents' time investments and children's cognitive development. Time diary data show that women's entry into the labor force is associated with behavioral changes in time use that make employment status an inadequate proxy for maternal involvement with children. When time diary inputs are used in place of mothers' employment, some results change. Research exploiting time-use data from the Child Development Supplement of the Panel Study of Income Dynamics shows that US mothers who are highly educated can use their time more productively, squeezing their leisure time to continue to provide similar amounts of time to their children when they work as when they do not [3].

The size of the impact of mothers' inputs on child cognitive outcomes depends on the childcare substitutes available to the household. While the mother's time is widely recognized as a crucial input to a child's cognitive development, the father's time may be equally productive, especially at some stages of a child's life. In recent decades, fathers' time with their children has increased markedly, partly offsetting the decline in mothers' time. A study drawing on time-use data finds that inputs of both parents are important for children's cognitive development, with impacts differing depending on whether parents are actively engaged with the child during the time they are together or merely passively present but not interacting with the child. Impacts also differ with the phase of a child's life [4].

In this model, the cognitive ability of a child at a given age is a function of both cognitive ability in the previous year and of a set of investments made by the household, which include active and passive time investments by both parents and household expenditures on "child goods" (such as tutoring, toys and games, books, and so forth). The study finds that parental time inputs are generally more productive than financial expenditures and that the impact of monetary transfers is small [4].

The study also shows that while mothers' time is especially important for younger children, fathers' time becomes more important as children grow. The effect of time parents spend actively engaged with their children decreases with a child's age. However, fathers spend more time with their children as their children age, partly offsetting the decline in the effect of the time spent by mothers.

Other studies have analyzed the impact of mothers' time on child outcomes, looking at the impact of changes in maternity leave. An analysis of a 1977 reform in Norway that increased paid and unpaid maternity leave finds that increasing a mother's time

with her child leads to a significant decline in high school dropout and a significant increase in wages at age 30. These effects are larger for mothers with low education [5]. These findings suggest that policies to increase and support mothers' time with their children in the first years after birth may positively influence children's abilities later in life.

However, a study of the impact of a 1979 expansion in maternity leave in Germany from two months to six months finds very different long-term outcomes. A comparison of outcomes for children born before and after the change in maternity leave policy shows no support for the hypothesis that the expansion in leave coverage improved outcomes for children [6]. The expansion in paid leave had no significant impact on children's average years of schooling or on wages at age 28. However, the study shows a reduction of mothers' work after childbirth in the short term and no impact in the long term.

The role of informal childcare provided by the extended family

Informal childcare provided by other members of the family such as grandparents may also affect child outcomes (see **Formal and informal, public and private childcare services**). Data from several countries indicate that grandparents play an important role in childcare. A large proportion of grandparents provide some kind of care for grandchildren, some on a regular basis. This proportion has decreased over time in countries where subsidized universal childcare has become available (Norway and Sweden, for example), while it has remained stable or increased in countries where affordable formal childcare is unavailable or where the economic downturn following the economic crisis of 2008/2009 has been particularly severe and persistent.

Formal and informal, public and private childcare services

Formal childcare is provided in childcare centers (often regulated at the local level in several dimensions, such as student-teacher ratio, staff and teachers' education, and space).

Formal childcare can be *publicly or privately provided*. Public provision is the rule in Europe; private provision is more common in the UK and the US. Public services are more strictly regulated than private services both in service standards and in management and personnel requirements.

Informal childcare includes the less regulated care offered by small group daycare providers and nannies or by members of a child's extended family.

A study using Millennium Cohort Survey data for the UK compared the impact on child outcomes of grandparents' care and formal childcare [7]. The results show that grandparents' care, as well as parental care, can positively affect some measures of cognitive outcomes while negatively affecting others. Children who received informal care from grandparents did better on vocabulary tests than children who received formal childcare but were less prepared for school. Informal childcare by grandparents was also shown to increase behavioral problems, while formal childcare reduced them. In center-based formal care, better trained staff may provide a more

stimulating environment, with more interaction with staff and other children and more educational activities than informal care.

These results differed considerably according to children's socio-economic backgrounds. The positive impact on a child's vocabulary associated with grandparents' care is stronger for children from advantaged backgrounds, while the negative impact on school readiness is stronger for children from disadvantaged backgrounds.

Other differences in the findings can be attributed to the fact that parents' inputs interact with other inputs, such as the type of childcare. School inputs are also important.

The role of formal care in childcare centers

Recent studies in countries with different degrees of childcare availability indicate that external childcare plays an important role in child outcomes even if the impact varies significantly across countries and within countries across income and education level.

Some studies for the US, where childcare is mostly private and unevenly regulated, report a negative effect on outcomes for children who attended childcare before kindergarten [3]. However, the results vary significantly across families, children, and childcare type. Using the National Longitudinal Survey of Youth 1979 and focusing on single mothers, a study reports that informal care has significant negative effects on cognitive achievement, especially for children of more educated mothers, while formal center-based care has no adverse effect [8].

In European countries, where formal childcare is mainly public, most analyses find a consistent positive impact in areas where public childcare is more widely available and of higher quality. Because access to these programs is not limited to disadvantaged children, the results found for universal programs can be informative about the effects of modes of care on children across a wide range of socio-economic backgrounds.

The positive results of formal childcare on child outcomes are stronger and more consistent in northern European countries. A recent analysis of the impact of a large increase in childcare supply in Norway in the 1970s shows strong and positive impacts on children's outcomes, especially for children of low-educated parents. The results suggest a positive and significant impact of childcare coverage on educational outcomes, such as years of education and college attendance, and also on longer-term outcomes such as adult earnings [9].

Analysis of the effects of the availability of public childcare in Italy, where quality is high but availability is low, on children's scholastic achievement finds that availability has positive and significant effects on children's reading test scores in elementary school but no effect on mathematics test scores. The study finds a greater effect on reading test scores of an increase in the availability of public childcare in areas where the supply is scarcer and in disadvantaged areas [10].

The situation is similar in western Germany, where high-quality formal care is available but is severely rationed in some parts of the country. A recent study finds that formal childcare has a positive impact on children's cognitive and non-cognitive abilities. The effects are stronger in centers with experienced and trained staff, indicating that quality matters [11].

Non-cognitive outcomes are also important to child development. Standard measures of non-cognitive outcomes are based on emotional symptoms, behavior problems, hyperactivity/inattention problems, and peer relationship problems. Denmark provides an interesting case for studying childcare because it offers a large, universal, and high quality formal childcare system. A recent empirical analysis compares outcomes for children in formal (municipal-regulated) preschool and informal family daycare services with those of children cared for by parents [12]. It finds that formal childcare does as well as parental care on non-cognitive outcomes and has a more positive effect on children's behavior than informal childcare arrangements.

An evaluation of a major policy innovation in the Canadian province of Quebec in the late 1990s, using the National Longitudinal Survey of Children and Youth, yields different results, however. The introduction of subsidized, universally accessible childcare in Quebec led to a large increase in mothers' employment but had a negative effect on several child outcomes, resulting in more behavior problems, anxiety and aggressiveness, and worsening health status, as well as to more hostile child-parent relationships [13].

LIMITATIONS AND GAPS

Much work remains to be done to link childcare choices and child development. More research is needed for countries in Africa, Asia, and Latin America. For a better understanding of the economics of child development, researchers need more panel data, including data on parents' time use, childcare program and school characteristics, and child cognitive and non-cognitive outcomes.

While several studies have analyzed the determinants of cognitive skills, less is known about non-cognitive skills. As more is learned about non-cognitive skills, it is becoming clear that they are as important as, or even more important than, cognitive skills in explaining academic and employment outcomes. In response, policymakers are giving more attention to how to develop such character (or soft) skills in children and young people.

However, despite growing interest in the topic, a causal relationship between non-cognitive skills and later outcomes has not been well established. Much of the neglect is due to the lack of a reliable means of measuring non-cognitive skills. Having more information on the impacts of non-cognitive skills is important for the development of household child investment models and the formulation of policy recommendations.

Most empirical studies analyzing the effect of maternal time investments on child outcomes face the challenge of identifying causal impacts. Although a number of studies have estimated the effect of childcare on children's cognitive development, only a few studies have tried to overcome the endogeneity problem (parents select the type of childcare and therefore that choice is influenced by parents' characteristics) or have dealt with the problem of unobserved child ability. Hence, most of the empirical evidence is limited to associations.

Another limitation concerns the quality of childcare. Very little is known about quality, and the few empirical studies that have examined it have mixed and inconclusive results. This ambiguity may reflect the limited number of indicators of quality that have been used in these studies, such as student-teacher ratios and teachers' education, which

are inadequate for identifying and measuring childcare quality. Other likely important variables, such as teachers' enthusiasm, communication skills, and dedication, are more difficult to measure.

SUMMARY AND POLICY ADVICE

Most empirical studies confirm the hypothesis that early investments (private and public) in children are likely to significantly increase cognitive outcomes in the short and long term and are crucial to success later in life. Studies also find that multiple actors contribute to the child development process. While mothers' input, particularly in early childhood, is clearly crucial, fathers and even grandparents are also important. High-quality formal childcare can also be very beneficial, especially for children in low-income households. Policymakers should carefully consider the influence of all these inputs when designing programs to improve children's cognitive and non-cognitive skills.

The results of the analyses and policy simulations reported here suggest that policies encouraging and supporting parents' efforts to spend more time with their children during early stages of development and policies promoting the development of high-quality formal childcare have positive impacts on child outcomes. The results also show that the positive association between formal childcare and positive child outcomes is stronger for children in more disadvantaged homes. Children in families with higher income and more education already receive substantial early investments within their families and have more resources and opportunities available to them. Low-income households often lack the resources needed to support and stimulate child development, so children in these homes are likely to receive less investment from their families and to have access to fewer resources.

These results have important implications for parental leave policies and the provision of affordable, high-quality childcare. Only a few studies have shown results that are not compatible with positive impacts of early interventions programs for children of low-income households. There is a strong case for providing public funding of early childhood programs for disadvantaged children. Universally accessible high-quality care reduces inequalities across children from different socio-economic backgrounds.

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Competing interests

The IZA World of Labor project is committed to the *IZA Guiding Principles of Research Integrity*. The author declares to have observed these principles.

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Further reading

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