TALIS

Quality Early Childhood Education and Care for Children Under Age 3

RESULTS FROM THE STARTING STRONG SURVEY 2018

OECD

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BETTER POLICIES FOR BETTER LIVES

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Foreword

The first three years of a child's life is a unique opportunity to support their development, learning and well-being. This period of life is critical to children's development: children learn at a faster rate than at any other time in their lives. It sets the foundations for children's personal, social and professional lives in the future.

The youngest children spend most of their time with their parents and in early childhood education and care (ECEC) settings. These are the two main contexts to support children's first steps in life. Over the last decades, the number of children enrolled in ECEC has expanded in most OECD countries with the view to promote child development, mitigate differences in educational outcomes observed among children from different socio-economic or demographic backgrounds, and support parents' participation in the labour market.

However, in 2017, on average in OECD countries, only one in three children under age 3 was enrolled in ECEC settings, with large differences across countries. In 2016, OECD countries spent on average 0.3% of their gross domestic product on ECEC for children under age 3 compared to 0.6% for pre-primary education. Only 70% of expenditure on ECEC for children under age 3 comes from public sources, making this sector of education, together with tertiary education, the most dependent on private sources of funding.

The Covid-19 crisis has demonstrated the necessity and fragility of ECEC for children under age 3. The closure of ECEC settings in many countries for weeks or months has led to parents all over the world juggling telework when this was an option and taking care of their children at home, which has generated stress and frustration. In many countries, maintaining ECEC services for children under age 3 for essential workers proved to be more difficult than for pre-primary or primary education, as the sector is much more fragmented with multiple providers. In countries with a large private sector, ECEC staff for the youngest children have appeared to be highly vulnerable to wage loss and risk of losing their jobs. Private ECEC settings are exposed to risk of bankruptcy as revenues have dropped while they were closed and parents hesitate to send their children back when they reopen. In these countries, the full effect of the crisis on the capacity and financial situation of the sector remains to be fully known.

The OECD Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) is the first international survey that focuses on the workforce in ECEC. As part of its first cycle, four countries participated in the option of ECEC for children under age 3: Denmark, Germany, Israel and Norway. These four countries have made ECEC for children under age 3 a policy priority and their enrolment rates of children under age 3 are much higher than the OECD average. However, these countries differ largely in the starting age of enrolment, the amount of expenditure in the sector and the organisation of the sector. This limited number of countries therefore offers an interesting panel of experiences.

Who are the staff who take care and educate our youngest children? How do they interact with children? Are ECEC settings supportive to the development and well-being of our youngest children? Are there large differences in the quality of ECEC within countries? These are the important questions for parents, actors in the ECEC field and policy makers that the survey attempts to answer.

Among the most important findings is the diversity of profiles of staff working in the sector in terms of roles and responsibilities, education and training background, experience and working conditions. Working with very young children requires skills and knowledge: in addition to practices used with groups of children, routine care offers opportunities for staff to interact with children, build relationships, and support their development and well-being. Policies need to be granular and help all staff continue to learn throughout their careers and work as professionals. Attracting talents to the profession is a real challenge due to low salaries and gender stereotypes, but raising the status of the profession would help achieve this goal.

Building strong relationship with parents is crucial at this age. The survey shows that the partnerships between staff and parents to support children's development can be strengthened. Even in the four participating countries with strong experience with ECEC for children under age 3, staff are not always well prepared to make the most of the interactions with parents, and some staff rank engaging with families as being among their top professional development needs.

The home-based settings sector requires careful attention. Staff in the sector express training needs in core areas of working with children's development and in some countries have a low level of education. These staff work long hours, creating barriers to their participation in training, and may also have limited opportunities to learn from peers.

We are increasingly aware and convinced of the importance of the first years of life for life in the future, but on several fronts, ECEC for children under age 3 is still precarious, lacking funding, talent and consistency across geographical areas. TALIS Starting Strong shows that large percentages of ECEC settings maintain waiting lists of children who want to enrol, with settings in urban areas more likely to do so than those in more rural areas. More can be done to make sure that ECEC fully supports all children in their development, learning and well-being.

Andreas Schleicher

Director for the Directorate for Education and Skills

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The OECD Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) is the outcome of a collaboration among the participating countries, the OECD Secretariat, and the International Association for the Evaluation of Educational Achievement (IEA) with its international consortium partners RAND Europe and Statistics Canada.

This report was prepared by Francois Keslair, under the guidance of Stéphanie Jamet, with substantial contributions from Elizabeth Shuey. Victoria Liberatore also contributed to the drafting of the report. Joana Cadima (external consultant) led a team that conducted a literature review that informed the content of the report. Andreas Schleicher and Yuri Belfali provided oversight and thoughtful leadership. Mernie Graziotin provided project support and prepared the manuscript for production. Cassandra Davis and Henri Pearson also provided support for report production and communications. The report was edited by Jennifer Allain. The authors are extremely grateful to the teams in the countries participating in the data collection with settings for children under age 3 (Denmark, Germany, Israel and Norway) who supported the project and provided valuable input and guidance on the scope and content of this report.

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Reader's guide

The OECD Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) is an international, large-scale survey of staff and leaders in early childhood education and care (ECEC). TALIS Starting Strong uses questionnaires administered to ECEC staff and leaders to gather data. Its main goal is to generate robust international information relevant to developing and implementing policies focused on ECEC staff and leaders and their pedagogical and professional practices, with an emphasis on those aspects that promote conditions for children's learning, development and well-being. It gives ECEC staff and leaders an opportunity to share their insights, allowing them to provide input into policy analysis and development in key areas. It is also a collaboration between participating countries, the OECD and an international research consortium. TALIS Starting Strong builds on the OECD's 20 years of experience in conducting ECEC policy reviews in the context of the *Starting Strong* series, the guidance of the OECD Network on Early Childhood Education and Care, and the established TALIS programme collecting data from school principals and teachers.

TALIS Starting Strong seeks to serve the goals of its three main beneficiaries: policy makers, ECEC practitioners and researchers. First, it aims to help policy makers review and develop policies that promote high-quality ECEC, for both professionals in the field and children. Second, TALIS Starting Strong aims to help staff, leaders and ECEC stakeholders to reflect upon and discuss their practice and find ways to enhance it. Third, TALIS Starting Strong builds upon past research to inform the future work of researchers.

TALIS Starting Strong has a cross-cutting focus on equity and diversity in addition to other areas covered by the survey, including staff and leaders' practices, beliefs, initial preparation, professional development and well-being; as well as other dimensions of process and structural quality. More information on the conceptualisation of these areas is available in the Starting Strong Teaching and Learning International Survey 2018 Conceptual Framework (Sim et al., 2019[1]).

This report is based on information and data available up to January 2020. The analysis presented does not consider any potential environmental and socio-economic effects of the COVID-19 epidemic.

Country coverage

This publication features results from staff and leaders who provide ECEC to children under age 3 in Denmark, Germany, Israel and Norway. Data collection in settings serving children under age 3 was an optional component of TALIS Starting Strong 2018, which focused on staff and leaders in pre-primary education (ISCED Level 02) settings in nine countries: Chile, Denmark, Germany, Iceland, Israel, Japan, Korea, Norway and Turkey. Findings from pre-primary settings as well as settings for children under age 3 are available in the TALIS Starting Strong series (OECD, 2019[2]).

In the tables throughout the report, countries are ranked in alphabetical order, with one exception: countries that did not meet the standards on TALIS Starting Strong participation rates are presented last in the tables. Similarly, countries that did not meet the standards on TALIS Starting Strong participation rates are not shown in any figures presenting results of the survey.

One note applies to the information on data for Israel:

- The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

How is this report organised?

This report presents the results and policy recommendations emerging from TALIS Starting Strong for ECEC settings for children under age 3.

- **Chapter 1** gives readers an overview of the main findings and policy implications of the report.
- **Chapter 2** describes the policy contexts of ECEC for children under age 3 as well as the governance and organisation of this sector in each of the four participating countries.
- **Chapter 3** investigates the characteristics of settings, such as location and size, as well as characteristics of the workforce, including education and experience in the ECEC sector.
- **Chapter 4** describes the practices that staff use with children and links these aspects of process quality to characteristics of settings and the workforce.
- **Annex A** contains information about the TALIS Starting Strong sampling procedures, response rates, sample sizes and a summary of the adjudication outcomes for each sample, along with cautionary notes about interpretation of the results, when necessary.
- **Annex B** contains information about complex variables derived from the staff and leader questionnaires that are analysed in the report and statistical methods used to analyse the data.
- **Annex C** contains the full list of online results tables.

What are the key features of the TALIS Starting Strong design?

The key features of the TALIS Starting Strong design are as follows:

- **Target sample size:** Minimum of 180 ECEC settings per country and level of ECEC (pre-primary education and settings serving children under age 3).
- **Target response rate for staff:** 75% of the sampled ECEC settings, together with a 75% response rate from staff within participating ECEC settings. An ECEC setting is considered to have participated if 50% of sampled staff within the setting responded to at least one question in the survey.
- **Target response rate for leaders:** 75% of the sampled leaders in the country.
- **Questionnaires:** Separate questionnaires for staff and leaders, each requiring approximately 45 minutes to complete. In addition, a combined questionnaire was used for staff in very small settings (i.e. with only one staff member or with only one main teacher and assisting staff) that included suitable questions from both the staff questionnaire and the leader questionnaire.
- **Mode of data collection:** Questionnaires were completed on paper or on line.
- **Survey windows:** March to May 2018 for countries participating on a northern hemisphere schedule and August to October 2018 for countries participating on a southern hemisphere schedule (with some extensions in both cases).

Further details on the sample for all target populations can be found in Annex A.

Classification of levels of early childhood education and care and the TALIS Starting Strong sample

The International Standard Classification of Education (ISCED) is an instrument for compiling statistics on education internationally. It distinguishes the following levels of education:

- early childhood education (ISCED Level 0)
  - early childhood educational development (ISCED Level 01)
  - pre-primary education (ISCED Level 02)
- primary education (ISCED Level 1)
- lower secondary education (ISCED Level 2)
- upper secondary education (ISCED Level 3)
- post-secondary non-tertiary education (ISCED Level 4)
- short-cycle tertiary education (ISCED Level 5)
- bachelor's or equivalent (ISCED Level 6)
- master's or equivalent (ISCED Level 7)
- doctoral or equivalent (ISCED Level 8).

Within early childhood education (ISCED Level 0), settings classified under ISCED-2011 have an intentional educational component and aim to develop cognitive, physical and socio-emotional skills necessary for participation in school and society. Programmes at this level are often differentiated by age, with early childhood educational development serving children under age 3 and pre-primary education serving children from age 3 until entry into primary school. Pre-primary settings in TALIS Starting Strong meet the ISCED-2011 definition for ISCED Level 02. Settings serving children under age 3 in TALIS Starting Strong were not required to meet the ISCED-2011 definition for ISCED Level 01.

Despite the distinction made by ISCED-2011 within ISCED Level 0, many countries, including several participating in TALIS Starting Strong, offer an integrated ECEC system. In integrated ECEC systems, a single government ministry or authority oversees ECEC programmes from birth or age 1 until entry into primary school. For countries with integrated ECEC systems that participated in data collection for both pre-primary settings and settings for children under age 3 (Denmark, Germany and Norway), the TALIS Starting Strong sampling strategy randomly split ECEC programmes that were expected to cover both age groups to be included in the sampling universe for one population of interest or the other. In this way, programmes could be sampled as part of the pre-primary sample or as part of the sample of settings for children under age 3, but the same programme would not be sampled for both levels of ECEC.

Next, staff were sampled within these settings if they were serving children within the designated level of ECEC. As a result, the sample of staff and leaders in settings for children under age 3 is representative of staff and leaders in settings providing services for this age group across all four participating countries, regardless of whether an integrated system exists or not. Furthermore, programmes included in the samples for ECEC for children under age 3 may also serve younger or older children. Home-based settings were included in the samples of settings for children under age 3 in Denmark, Germany and Israel. These represent 16% of the settings serving children under age 3 in Denmark and Germany and 60% in Israel.

The specific programmes or settings vary across and within countries (see Box 1 for details on the types of settings covered in each participating country).

Box 1. Early childhood education and care settings included in TALIS Starting Strong

Denmark	Kindergartens, integrated institutions, nurseries, day care facilities and home-based day care
Germany	Kindergartens, school kindergartens, pre-school classes, mixed-age ECEC centres, day nurseries and family day care
Israel	Kindergartens, day care centres and family day care
Norway	Kindergartens

Notes: The settings listed here are the English translations of the setting types within each country. These translations were used for the purposes of creating the TALIS Starting Strong sampling frame.

Data underlying the report

TALIS Starting Strong results are based exclusively on self-reports from ECEC staff and leaders and, therefore, represent their opinions, perceptions, beliefs and accounts of their activities. The views of staff and leaders provide insight into how they perceive the ECEC environments in which they work and how policies in place are carried out in practice. But, as with any self-reported data, the information is subjective and may, therefore, differ from data collection through other means (e.g. administrative data or observations). The same is true of leaders' reports about centre characteristics, sources of funding and practices, which may differ from descriptions provided by administrative data at national or local government levels. TALIS Starting Strong does not directly measure children's learning, development and well-being nor does it provide data on children and families participating in ECEC. No data imputation from administrative data or other studies is conducted.

In addition, as a cross-sectional survey, TALIS Starting Strong cannot assess causality. For instance, in examining the relationship between staff education and process quality, it is possible to determine the direction (positive, negative) of the association, its strength and statistical significance. It is not possible, however, to establish whether different levels of staff education lead to different levels of process quality or whether settings with different levels of process quality attract staff with different educational profiles.

Results from both staff and leaders are included throughout the report, to understand the different aspects of ECEC settings that matter for children's learning, development and well-being. The analyses also aim to draw meaningful international comparisons while acknowledging the complex differences in ECEC systems across participating countries. Throughout the report, emphasis is put on contextualising the findings by highlighting aspects of national settings, and also by breaking down results according to contextual variables, for instance, whether settings include a minority or a majority of children under age 3.

Results are presented only when estimates are based on at least 10 settings/leaders and/or 30 staff. The results referred to in this volume can be found in Annex C and through OECD StatLinks at the bottom of the tables and figures throughout the report.

Reporting staff and leader data

As part of the TALIS Starting Strong 2018 data collection, all staff who worked regularly in a pedagogical way with children in officially registered settings providing ECEC in participating countries were eligible to participate. Within ECEC settings, centre co-ordinators identified staff as eligible to participate as a centre

leader (the person with the most responsibility for administrative, managerial and/or pedagogical leadership) or in one of several roles working directly with children: teacher, assistant, staff for individual children, staff for special tasks, or intern. In some countries, other specific staff roles were also included, but these roles were simultaneously coded to reflect one of the overarching international categories.

The initial assignment of staff to these categories ensured that all staff who were eligible to participate were included in the sample selection process and, if selected, were asked to complete the relevant questionnaire (leader or staff). A combined questionnaire was used for staff in very small settings (i.e. with only one staff member or with only one main teacher and assisting staff). It included suitable questions both from the staff questionnaire and the leader questionnaire. Respondents who completed these combined questionnaires are included in the data reported for both staff and leaders.

The staff categories used to identify staff eligible for participation were also used after data collection to group respondents according to their overall roles in the ECEC settings, focusing on teachers and assistants. Teachers are those with the most responsibility for a group of children. Assistants support the teacher with a group of children. This distinction is used in many of the tables and analyses that provide a comparison between teachers and assistants.

However, several countries do not make a distinction between teachers and assistants in this way. In settings serving children under age 3 in Israel, fewer than 1% of participating staff were identified as assistants, making the comparison between teachers and assistants impossible for this population as well. In the remaining countries and populations (Denmark, Germany and Norway), the roles of teacher and assistant can, but do not necessarily, reflect differences in staff credentials. Rather, for TALIS Starting Strong, the difference between teachers and assistants is defined to reflect the roles that staff members typically have within their settings.

Reporting staff data

The report uses the term “staff” as shorthand for the TALIS Starting Strong population of teachers, assistants, staff for individual children, staff for special tasks and interns. In addition, leaders who also had staff duties (e.g. those working alone or in very small settings) are included in the staff data throughout this report.

Reporting leader data

The report uses the term “leader” to identify the person who was identified as having the most responsibility for administrative, managerial and/or pedagogical leadership in their settings. Responses from leaders who also had staff duties (e.g. those working alone or in very small settings) are included in both the leader data and the staff data throughout this report. Leaders provided information on the characteristics of their settings and their own work and working conditions by completing a leader questionnaire or a combined questionnaire. Where responses from leaders are presented in this publication, they are usually weighted to be representative of leaders. In some cases, leader responses are treated as attributes of staff working conditions. In such cases, leaders’ answers are analysed at the staff level and weighted to be representative of staff (see Annex B).

Staff reports of their own roles in the target group

In addition to the initial categories used to classify staff for participation in TALIS Starting Strong, staff who participated in the survey had the opportunity to describe their roles within a specific group. Staff were asked to consider the first group of children that they worked with on their last working day before the survey (the target group) and to select the category that best represented their role in that group on that day (leader, teacher, assistant, staff for individual children, staff for special tasks, intern or other).

Throughout the report, those who describe themselves as “leaders” and “teachers” are grouped together to describe the staff with the most responsibility in the target group.

These staff reports do not necessarily reflect staff members’ broader roles in the ECEC centre, but they provide contextual information for other questions that were asked about the target group. These role distinctions are used in tables and analyses that focus on the target group.

Leader reports of roles within their settings

Leaders provided an overview of the number of staff in each category working in their ECEC settings (leaders, teachers, assistants, staff for individual children, staff for special tasks, interns and other staff). These data cannot be linked to individual staff responses on the questionnaire, but they give a summary of the human resources available in each participating ECEC centre. These role distinctions are used in tables and analyses at the centre level.

Reporting data on the number of children

For a subset of questions, staff reported on their work with the target group (the first group of children that they worked with on their last working day before the survey). In some cases, the target group may reflect a stable group of children and adults. In other cases, the target group may reflect a staff member’s full day of work, involving many other staff (e.g. those who join the group for special activities or who come to ensure that the required group ratios are maintained while another staff member takes a break) and perhaps a changing set of children as well. In settings for children under 3 in Israel, target groups comprise a classroom that can be organised into smaller subgroups depending on the ages of the children.

To better understand the numbers of staff and children that interact together in these target groups, this report refers to the number of staff per child in the target group. With regard to target groups, the “number of staff per child” refers to the total number of staff working with the target group, regardless of their role, divided by the number of children in the target group. Because the number of staff per individual child is low, when specific examples are cited for comparative purposes, they are presented as the “number of staff per ten children” in the target group. This grouping of ten children is designed to facilitate comparisons across different staffing approaches and different countries. It does not imply that target groups include only or exactly ten children; some target groups may be larger and others smaller. The results can be interpreted as the average number of staff (i.e. leaders, teachers, assistants, staff for individual children, staff for special tasks, interns or others) with whom a group of ten children may interact at various points during their time in the target group.

In addition to reporting the number of staff working in their settings, leaders also report on the number of children enrolled in their settings. To understand the numbers of staff and children that interact together in settings, this report also refers to the number of staff per child in the centre. In regard to settings, the “number of staff per child” refers to the total number of staff working in a setting, regardless of their role, divided by the total number of children enrolled. Again, because the number of staff per individual child is low, when specific examples are cited for comparative purposes, they are presented as the “number of staff per ten children” in the setting. The results can be interpreted as the average number of staff (i.e. leaders, teachers, assistants, staff for individual children, staff for special tasks, interns or others) with whom a group of ten children may interact at various points during their time in the setting.

These TALIS Starting Strong indicators on the “number of staff per child” differ from regulated child-to-staff ratios, as they do not take into account factors such as whether staff members are working full-time or part-time, the number of hours during which each child attends the centre, and the time staff are expected to directly interact with children (versus time when staff may be present at the centre but engaged in other types of work, such as planning or professional development).

Rounding figures

Because of rounding, some figures in tables may not add up exactly to the totals. Totals, differences and averages are always calculated on the basis of exact numbers and are rounded only after calculation.

All standard errors in the publication have been rounded to one, two or three decimal places. Where the value 0.0, 0.00 or 0.000 is shown, this does not imply that the standard error is zero, but that it is smaller than 0.05, 0.005 or 0.0005, respectively.

Statistically significant differences

Statistically significant differences are denoted using different colours in figures. See Annex B for further information.

Additional data sources

Throughout the report, additional data sources are included to better understand the context of ECEC systems in participating countries. Additional data sources include the OECD's *Education at a Glance* publication (2019[3]), the *OECD Family Database* (2020[4]) and an OECD policy survey on *Quality beyond Regulations* (2019[5]). The *OECD Quality beyond Regulations* policy survey provides data on the policies and regulations governing aspects of quality in ECEC settings. It was completed in 2019 by ministries and governing authorities responsible for the oversight of ECEC in countries, including the countries participating in TALIS Starting Strong. This publication presents the first findings of the *OECD Quality beyond Regulations* policy survey for countries participating in TALIS Starting Strong.

Abbreviations

- ECEC Early childhood education and care
- ISCED International Standard Classification of Education
- PPP Purchasing power parity (i.e. the purchasing power of staff salaries using a common currency [USD] to facilitate cross-country comparisons)
- QRIS Quality rating and improvement systems
- s.e. Standard error
- TALIS Teaching and Learning International Survey

Further technical documentation

For further information on the TALIS Starting Strong instruments and the methods used, see the *TALIS Starting Strong 2018 Technical Report* (OECD, 2019[6]).

This report uses OECD StatLinks. All tables and figures are assigned a URL linking to a corresponding Excel™ workbook containing the underlying data. These URLs are stable and will remain unchanged over time. In addition, readers of the e-books will be able to click directly on these links, and the workbook will open in a separate window if their Internet browser is open and running.

References

OECD (2020), *OECD Family Database*, https://stats.oecd.org (accessed on 13 January 2020). [4]

OECD (2019), *Education at a Glance 2019: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/f8d7880d-en. [3]

OECD (2019), "OECD Network on Early Childhood Education and Care: Quality beyond Regulations survey", *internal document*, OECD, Paris. [5]

OECD (2019), *Providing Quality Early Childhood Education and Care: Results from the Starting Strong Survey 2018*, TALIS, OECD Publishing, Paris, https://doi.org/10.1787/301005d1-en. [2]

OECD (2019), *TALIS Starting Strong 2018 Technical Report*, OECD Publishing, Paris, http://www.oecd.org/education/talis/TALIS-Starting-Strong-2018-Technical-Report.pdf. [6]

Sim, M. et al. (2019), "Starting Strong Teaching and Learning International Survey conceptual framework", *OECD Education Working Papers*, No. 197, OECD Publishing, Paris, https://doi.org/10.1787/106b1c42-en. [1]

Executive summary

During their first three years, children grow and learn at a faster rate than at any other time in their lives. Increasingly, children spend at least part of this developmental period in early childhood education and care (ECEC) settings. High-quality ECEC for all children can be a powerful way to promote young children's learning, development and well-being, as well as support parental participation in the labour force. However, the ECEC sector for children under age 3 varies greatly across countries in terms of enrolment rates, structure, investment and governance. Within countries, the experiences of children under age 3 can also differ based on the type of setting they attend and the staff working in these settings.

The OECD Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) asks ECEC staff and leaders in settings for children under age 3 about themselves and their ECEC settings. This report examines multiple factors that are known to determine quality of ECEC for children under age 3 in each of four participating countries (Denmark, Germany, Israel and Norway).

A complex and growing sector

The four countries participating in TALIS Starting Strong for settings for children under age 3 have some of the highest ECEC enrolment rates for children age 2 among OECD countries, ranging from 67% in Germany to around 90% in Denmark and Norway. However, in Denmark, Germany and Norway, few children under age 1 are enrolled in ECEC, whereas in Israel the rate is roughly 30%.

The ECEC sector for children under age 3 is growing rapidly, but a majority of leaders in these four countries report that they maintain a waiting list of children who could not yet enrol. In addition, with the exception of Norway, leaders of ECEC centres report that staff shortages and staff absences are an important barrier to their effectiveness. These findings highlight the growing demand for ECEC for children under age 3 and the challenges of developing a workforce and settings to adequately meet this demand.

In three of the countries, one national ministry oversees ECEC for children from birth or age 1 until entry into primary school. In Israel, separate ministries have oversight for ECEC settings for children under age 3 than for those for children age 3 and up. In all four countries, the ECEC sector for children under age 3 is comprised of home-based and centre-based settings. In Germany, a larger share of settings are privately (vs. publicly) managed and governing boards are more involved in the management of centres compared to the other participating countries. These different governance and organisation approaches are characteristic of the sector and can contribute to variability in the quality of ECEC for children under age 3.

Characteristics of settings and staff vary widely, but staff are overwhelmingly committed to the sector

In Denmark, Germany and Norway, most children under age 3 are enrolled in integrated ECEC centres that also serve children over age 3. Centres in Germany, with an average of 60 children, are larger than in Norway; however, centres in Germany have a smaller proportion of children under age 3 than centres in

Norway. In Israel, where settings only include children under age 3, the average size of centres is similar to Germany.

Staff education and roles vary within ECEC settings. In Germany, teachers are slightly more likely than assistants to have at least a bachelor's degree or equivalent, but teachers and assistants spend similar amounts of time working directly with children. In Norway, nearly all teachers have at least a bachelor's degree or equivalent, while only a minority of assistants do, and assistants rarely undertake tasks without children (e.g. documenting children's development). Israel does not have assistants; the majority of staff have a post-secondary degree distinct from a bachelor track (ISCED level 4 or 5). In centre-based settings in Denmark, Israel and Norway, a substantial minority (25-30%) of staff have not been trained specifically to work with children as part of their initial education.

More than 95% of staff across the 4 countries enjoy working in their ECEC centre, but less than 60% feel valued by society and around 30% or less are satisfied with their salary. Staff in all countries report a lack of resources as an important source of stress. In Germany, extra duties due to absent staff and excessive work documenting children's development are also frequently reported to be a source of stress, while in Norway, the number of children in the classroom/playroom is the most frequently reported source of stress. In Germany and Israel, staff in home-based settings tend to work more hours per week than staff in centre-based settings.

Staff focus on practices to facilitate children's oral language and socio-emotional development

Across the four participating countries, staff share a belief that developing oral language skills is important to prepare children for the future. This belief is reflected in the practices staff report in their settings to facilitate children's oral language development. In addition, staff in all four countries report frequent use of practices to facilitate prosocial behaviour (e.g. encouraging children if they comfort each other) and emotional development (e.g. hugging children). Staff indicate that specific practices to support literacy and numeracy development are used less frequently in their settings.

In all countries, more than half of staff report that practices facilitating communication with parents about activities with children and children's development apply very well to their centres. However, fewer staff report that their centre encourages parents to do learning activities with their children at home. Staff also report engaging in practices adapted to children's needs and interests across domains, but adapting activities to differences in children's cultural background is less common.

Policy priorities for early childhood education and care for children under age 3

The findings presented in this report suggest several priority areas for policies to ensure high-quality ECEC:

- **Focus on the foundations of ECEC for children under age 3:** The growing demand in this sector needs to be met with an investment to increase the supply of ECEC while ensuring high quality.
- **Design policies that work with the complex organisation of the sector:** ECEC staff must be prepared to adapt to rapid changes in children under age 3 whether they work in centre- or home-based settings; monitoring should support quality improvement in all settings.
- **Recognise ECEC staff as professionals:** Ensuring all staff develop their competencies all along their careers through both formal and informal learning is essential for establishing a workforce that is ready to provide high-quality ECEC for children under age 3.
- **Attract and retain a high-quality workforce:** Raising the status of the profession through adequate salaries, fewer sources of stress and opportunities for career progression can help achieve this goal.

1 Ten policy priorities to promote quality in early childhood education and care for children under age 3

Early childhood education and care (ECEC) for children under age 3 is a growing sector across OECD countries. The 2018 Starting Strong Teaching and Learning International Survey provides rich information on the settings where children under age 3 spend their time, including the practices staff use to facilitate children's learning, development and well-being. This chapter discusses policy implications based on the main findings from this report, identifying ways that countries can support the quality of ECEC environments for children under age 3.

The first three years of children's lives are critical to their development. It is during this period that children grow and learn at a faster rate than at any other time in their lives, laying the foundation for their understanding of the world. Children in this age range are also heavily reliant on others to help meet their basic needs and to facilitate their interactions with the world around them. High-quality early childhood education and care (ECEC) can thus be a powerful way to promote young children's learning, development and well-being.

The OECD Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) is the first international survey that focuses on the workforce in ECEC. The workforce is integral to ensuring quality in ECEC and their responses to the survey provide timely insight into the contexts where young children spend a majority of their time outside the home. TALIS Starting Strong approximates quality in ECEC settings through staff's and leaders' responses to questions covering many aspects of ECEC, including the characteristics of the settings and of the workforce as well as the practices staff use with children.

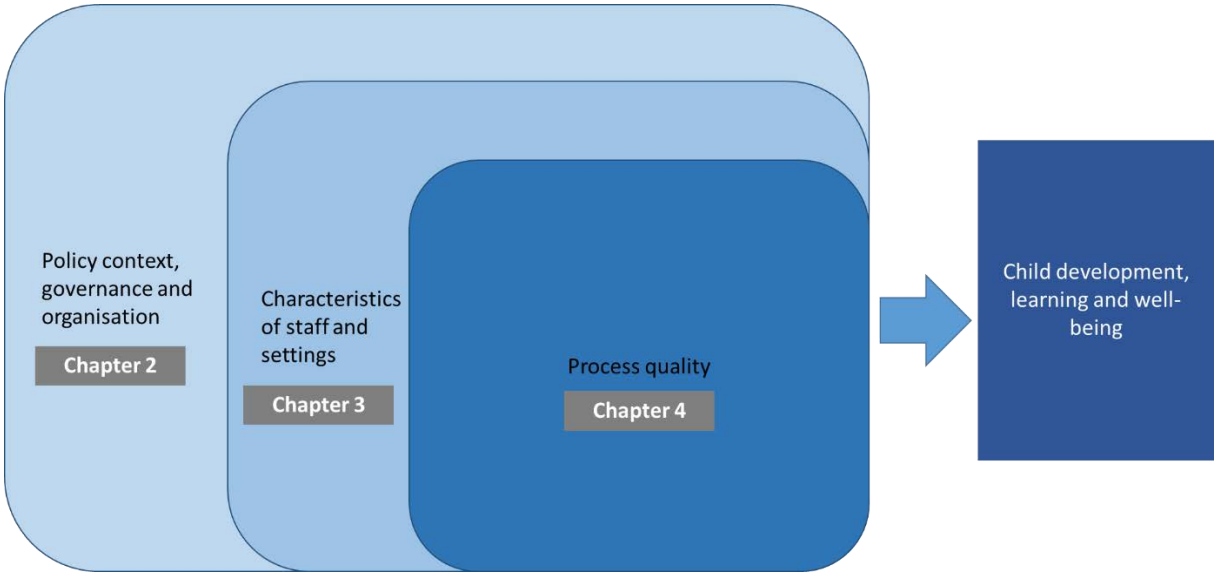
Process quality is the aspect of ECEC that is most proximal to children's learning, development and well-being. The quality of interactions in ECEC settings, including how staff engage with children and with parents/guardians, constitute process quality. TALIS Starting Strong was designed to approximate process quality in four major domains: 1) facilitating language, literacy and numeracy development; 2) facilitating socio-emotional development; 3) facilitating group organisation and individual support; and 4) facilitating engagement of parents/guardians. TALIS Starting Strong was also designed to describe characteristics of the ECEC workforce and ECEC settings. The goal of TALIS Starting Strong and of this publication is to compare ECEC settings and practices within and across countries to identify policy strategies to improve ECEC for all children.

The rapid growth of children under age 3 requires that ECEC settings for this age group be specifically adapted to the evolving needs of these children. The COVID-19 pandemic underscores the complexity of providing education and care for this group: As people around the world distance from one another, children under age 3 continue to require close contact with others to meet their basic needs and to ensure their positive development and well-being. Countries are faced with the challenges of maintaining ECEC to support essential workers, making the ECEC workforce essential in many cases. In contrast to other levels of education, ECEC for children under age 3 cannot be replaced, even temporarily and imperfectly, with virtual programming.

Although data were collected prior to the pandemic, TALIS Starting Strong investigates the working conditions of staff in ECEC settings for children under age 3, as well as the practices they use. These data are important for identifying strengths of the ECEC sector and for learning about areas where policies can better support this important workforce and, ultimately, young children. This report focuses specifically on ECEC for children under age 3 in recognition of the unique nature of this period of a child's development and the specific role of ECEC staff working with this age group.

This publication includes results from staff (those who work regularly in a pedagogical way with children) and leaders (those with the most responsibility for administrative, managerial and/or pedagogical leadership in the ECEC setting) in settings for children under age 3 in four countries (Denmark, Germany, Israel and Norway). This chapter describes the main findings of the report and their policy implications. Chapter 2 describes the policy contexts of ECEC for children under age 3 as well as the governance and organisation of this sector in each of the four participating countries. Chapter 3 investigates the characteristics of settings, such as location and size, as well as those of the workforce, including education and experience in the ECEC sector. Finally, Chapter 4 describes the practices that staff use with children and links these aspects of process quality to characteristics of settings and the workforce. Figure 1.1 summarises the framework used to understand the quality of ECEC for children under age 3 and the structure of this publication.

Figure 1.1. Framework for the analysis of the quality of early childhood education and care environments for children under age 3 in TALIS Starting Strong



The foundations of education and care for children under age 3

ECEC supports two main policy goals: promoting child development and well-being and supporting parents' participation in the workforce. Although these goals are closely connected, they also span traditional policy areas around education, labour, health and social welfare. The intersection of these different areas can create challenges for governments to develop coherent, family-centred policy approaches, but also presents unique opportunities to advance multiple policy goals simultaneously.

This intersection of policy areas is relevant at all levels of ECEC, but particularly pronounced for children under age 3. Policies around maternal and infant health as well as parental leave take precedence during the first weeks or months of a child's life. However, increasingly, children are transitioning from sole parental care to enrolment in ECEC settings before age 3, with wide variation both within and across countries in who participates in ECEC during these early years (see Chapter 2). Variations in participation in ECEC can contribute to differences in educational outcomes observed among children from different socio-economic or demographic backgrounds. Children from disadvantaged socio-economic backgrounds benefit the most from high-quality ECEC environments, but are less likely than other children to enrol due to the cost of ECEC, smaller incentives to enrol children in ECEC for parents with lower earning capacity and a lower supply of high-quality ECEC services in disadvantaged areas.

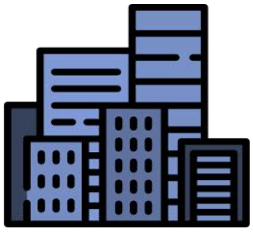
Regardless of where children under age 3 spend their time, they learn through interactions with the people around them. Responsive interactions with caregivers, characterised by warmth and sensitivity to a child's needs and interests, help young children become increasingly engaged with their environments. In this way, caregivers, whether they are parents, guardians or staff in ECEC settings, are also teachers for very young children, providing both education and care through their interactions with children. These sorts of responsive interactions form the core of process quality in ECEC settings, supporting the positive outcomes for children that are associated with participation in high-quality ECEC.

Policy pointer 1: Ensure equitable access to quality early childhood education and care

The availability of settings for children under age 3 has not necessarily kept pace with the growing demand for ECEC for children in this age group. TALIS Starting Strong data show that many settings maintain waiting lists of children who want to enrol and that settings in urban areas are more likely to have waiting lists than those in more rural areas (see Chapter 2). In addition, in Germany and Norway, where ECEC settings can include children under age 3 as well as older children, ECEC settings in urban areas serve larger proportions of children under age 3 compared to settings in more rural areas (see Chapter 3).

These findings suggest that the supply of ECEC for children under age 3 may not adequately meet the demand, which may be concentrated in more urban areas. Policy makers can help expand the availability of high-quality ECEC in areas where waiting lists are typical by considering opening new centres, fostering local partnerships between providers of training programmes for ECEC and ECEC centres to help address shortages of staff, and developing the provision of high-quality home-based settings. Furthermore, ensuring that ECEC settings outside of urban areas are equipped to work with children under 3 can encourage more families to enrol their children.

Cities and rural areas have varying availability of early childhood education and care for children under age 3



Early childhood education and care settings include more children under age 3 when they are located in cities compared to more rural areas

Waiting lists in early childhood education and care settings for children under age 3 are also more common in cities

Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

Policy pointer 2: Promote family engagement in early childhood education and care

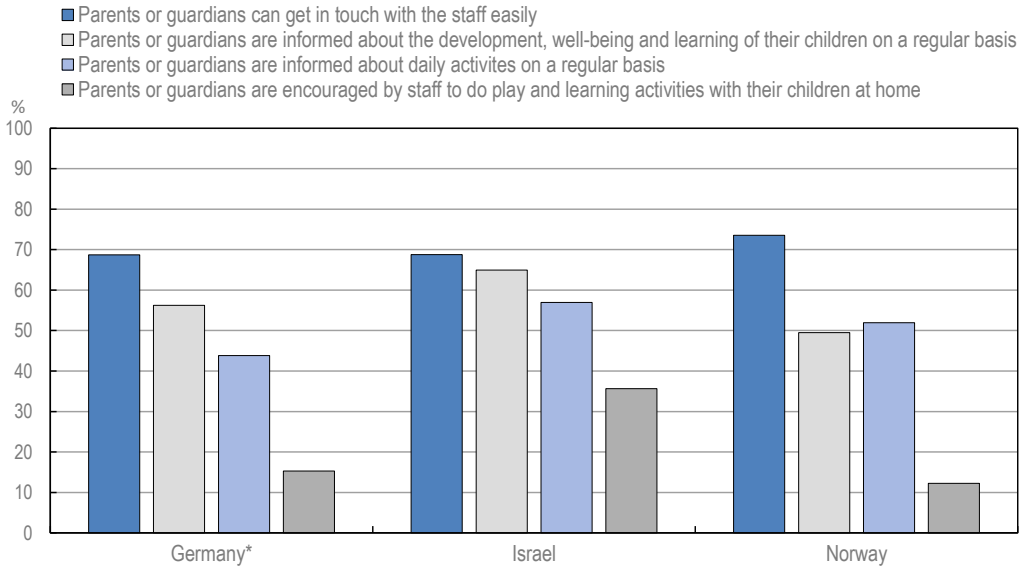
The close connections between education and care for children under age 3 mean that children benefit from strong partnerships between their parents/guardians and ECEC staff. Across countries, most staff participating in TALIS Starting Strong report that parents/guardians can easily get in touch with staff in the ECEC setting. However, fewer staff report that other ways to engage families, such as by encouraging families to play and carry out learning activities at home, are very common in their settings (see Chapter 4 and Figure 1.2).

Interactions between ECEC staff and parents/guardians are an important aspect of process quality and a key way to promote children's learning, development and well-being. Policies can support ECEC staff to effectively engage with families by making this a central component of curriculum frameworks and by ensuring that staff are prepared through their initial and ongoing training to work closely with families. Although working with parents/guardians and families is a common element of pre-service training in most countries, only a small majority (61%) of staff in centre-based settings in Israel indicate that this topic was covered in their initial training programme. This type of initial training is more common in Germany, but

staff nonetheless rank engaging with families among their top professional development needs (see Chapter 3). In addition to training staff to engage with families, campaigns to raise public awareness of the importance of close co-operation between ECEC and parents/guardians can encourage families to engage more closely with ECEC staff as well.

Figure 1.2. Use of practices to facilitate parent/guardian engagement in centre-based early childhood education and care settings

Percentage of staff who report that the following practices describes "very well" how they engage with parents or guardians in this ECEC centre



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147137

Policy pointer 3: Give attention to the costs of high-quality early childhood education and care

The central importance of responsive interactions for high-quality ECEC means that staff need to be able to give adequate individualised attention to all children. Therefore, staff in ECEC settings for children under age 3 need to be able to interact with children as part of small groups, even more so than at other levels of education. These smaller groups imply higher costs per child due to the number of staff required. The exact costs and the extent to which they are shared between public and private entities vary across countries and across ECEC settings within countries, but strong investment in the ECEC workforce and appropriate group sizes is necessary to ensure high-quality ECEC for children under age 3.

The combined public and private expenditures in Germany and Norway on ECEC for children under age 3 reflect the greater costs for this age group compared with education for older children. In contrast, in Israel, expenditures on ECEC for children under age 3 are less than those for other levels of education (see Chapter 2). These expenditure differences are evident in the number of staff in ECEC settings and the group sizes reported in TALIS Starting Strong. Specifically, in Norway, leaders report a greater average number of staff per setting than in other countries, despite also having a smaller number of children per setting (see Chapter 3).

Having more children attend a single setting can lead to economies of scale, or create challenges around managing larger numbers of children, staff and resources. In Israel and Norway, larger centre size is associated with more practices to facilitate numeracy development and play and to engage parents; the opposite is true in Denmark (with low response rates) and Germany (see Chapter 4). Although different policy responses are needed for these different contexts, governments need to ensure that quality is supported regardless of the size of the centre. In Israel and Norway, this can involve helping smaller settings to access materials and resources, including adequate staff time and ongoing professional development for current staff, to help promote practices around quality. In Denmark and Germany, larger centres may need support to ensure that all classrooms/playrooms within the setting have sufficient materials and resources to help staff engage in high-quality interactions with all children throughout the day.

The organisation of early childhood education and care offerings for children under age 3

Given the intersection of policy areas relevant for families during children's early years, countries follow different approaches in the organisation and governance of ECEC for children under age 3. Among the countries participating in TALIS Starting Strong for this age group, Denmark, Germany and Norway have integrated systems of ECEC, meaning that a single government authority oversees ECEC for children under age 3 as well as pre-primary education for children age 3 and older. Although overseen by a single authority, regulations can differ depending on the age ranges of children within groups and settings (OECD, 2019[2]). In Israel, a split system of ECEC governance exists, with different ministries responsible for ECEC for children under age 3 than for those over age 3. Even within this split system, different requirements and regulations exist depending on the age ranges of children within groups, reflecting the varying needs of infants under age 1, young toddlers and older toddlers.

As these different regulations reflect, children under age 3 are not a homogenous group. Because they are developing more rapidly than at any other point during their lifetimes, their abilities and interests shift quickly. For example, as infants gain mobility and begin to explore their environments more independently, their needs change as well, meaning that children who are close in age can be quite different from one another in their development. ECEC staff must be prepared to adapt to these rapid changes, continuing to be responsive and sensitive to all children in their groups.

In addition to different types of governance for ECEC for children under age 3, different types of settings are also common. In Denmark, Germany and Norway with integrated systems, children aged 0-5 enrol in the same settings while in Israel, children under age 3 and those aged 3-5 attend different settings. Home-based ECEC is an option in many countries, including all four countries participating in TALIS Starting Strong for children under age 3, although home-based settings were not included in the survey in Norway. These settings typically involve a single staff member working at home with a small group of children. In contrast, centre-based settings generally include multiple classrooms/playrooms and staff members working in teams. With fewer children, home-based settings can provide a good fit with the individualised attention required for children under age 3. However, quality may not be supported in the same ways in home-based settings as in centre-based ones. For instance, in Germany, staff in home-based settings have a lower educational attainment than staff in centre-based settings.

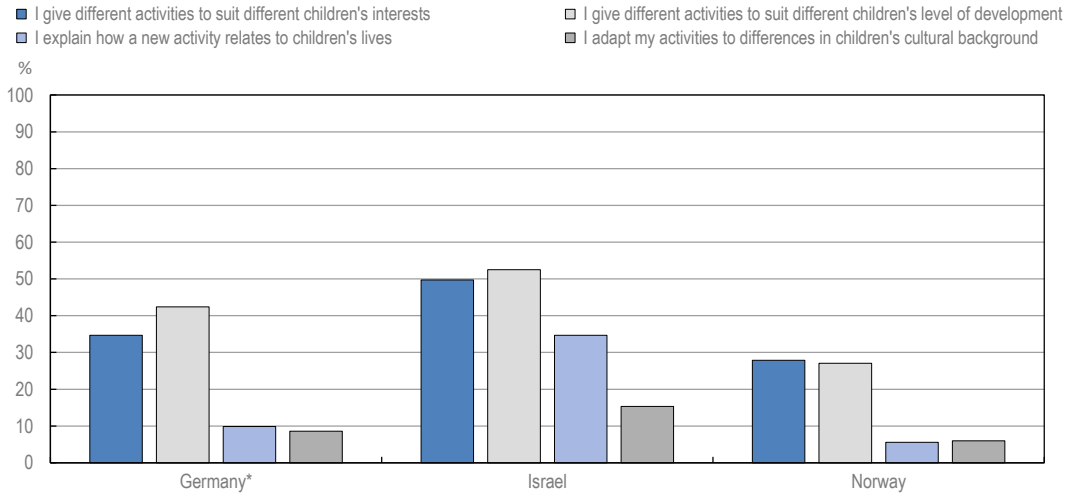
Policy pointer 4: Ensure staff initial training reflects the unique needs of children in this age group

As children under age 3 are developing rapidly, ECEC staff need to be well prepared to work effectively with this age group. Although initial training specifically to work with children is common among staff participating in TALIS Starting Strong, it is not universal. This type of training is most common in Germany, where more than 90% of staff have had such training, and also in home-based settings in Israel. However, in centre-based settings in Denmark, Israel and Norway, a substantial minority (25-30%) of staff lack this educational background (see Chapter 3). Policies can help address this gap by setting initial training requirements for new staff. Such requirements can include both traditional training modules as well as work-based learning components to give future ECEC staff direct experience working with children under age 3. Ongoing professional development can ensure current ECEC staff are well equipped to meet the demands of working with groups of very young children.

Staff also need specific training to successfully individualise practices to support children's development. Staff in all four countries report regularly adapting practices to children's individual needs. However, practices around connecting activities to children's lives and adapting activities to children's cultural backgrounds are less common than practices around adapting to individual children's interests and level of development, which could reflect a willingness to treat all children equally or a lack of preparation to adapt practices in these ways (see Chapter 4 and Figure 1.3). Staff's educational background contributes to greater use of adaptive practices. As such, training and professional development can be enhanced to help staff integrate more adaptive practices into their work, particularly related to children's daily life and cultural backgrounds. A greater focus on these specific types of adaptive practices can also serve as a way to engage more closely with families.

Figure 1.3. Use of practices to adapt to children's interests and needs in centre-based early childhood education and care settings

Percentage of staff who report that they use the following practices "always or almost always" in their work with a target group of children



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: The target group is defined as the first group of children staff were working with on the last day before the day of the survey.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147156

Policy pointer 5: Review the working hours and the allocation of time across tasks in home-based settings

Working in small settings, home-based ECEC staff must carry out a wide variety of tasks. These include working directly with a small group of children who may have a wider age range than in most centre-based classrooms/playrooms, planning and preparing activities with children as well as managing administrative aspects of providing ECEC. As such, it is not surprising that home-based staff in TALIS Starting Strong report working more hours per week than staff in centre-based settings. In Germany, home-based staff work, on average, 47 hours per week, whereas their colleagues in centre-based settings work an average of 32 hours per week. In Israel, home-based staff work an average of 49 hours per week compared with 34 hours per week on average among their centre-based peers.

Staff in home-based settings work long hours

Staff in home-based settings work more hours per week than centre-based staff

Staff in home-based settings spend more time with children and more time on tasks without children than centre-based staff

Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

Staff in home-based settings often work long hours to meet the demand from families with long working days. However, working long hours and having multiple tasks to perform generates stress for staff in home-based settings. In Germany, staff in home-based settings indicate keeping up with changing requirements from authorities and too much administrative work as important sources of stress. In addition, with the long hours worked by home-based providers, finding additional time for engaging in professional development activities can be a challenge. In Denmark and Germany, home-based staff report similar needs for professional development as centre-based staff. In Israel, more than one-third of home-based staff report a strong need for professional development in several areas, including facilitating learning in literacy and oral language and in the arts.

Policy makers can review the working hours of staff in home-based settings with a view to providing flexibility to families, but also to protect staff against too long working hours. Regulated working hours can include time for tasks to be performed without children. Furthermore, developing networks of home-based providers can enable these staff to find time for tasks to be performed without children and to participate in peer-learning activities.

Policy pointer 6: Use monitoring to support process quality and quality improvement in all settings

Monitoring ECEC settings through external evaluation helps ensure that minimum standards are met across all settings and can enhance quality. In order to enhance quality, monitoring must include the various factors that support quality in ECEC and provide opportunities for quality improvement. This means that monitoring must address both structural and process aspects of quality in addition to administrative and funding aspects. For process quality, monitoring needs to include staff's interactions with children, their ability to adapt practices to individual children's needs and interests, and support for parent/guardian engagement, with the objective to help staff improve their practices.

Less than half of leaders in Germany and Norway report inspections regarding process quality occurring at least annually. Although the percentage of leaders reporting this type of inspection is higher in Israel, more leaders report that monitoring around structural quality and facilities occurs annually or more frequently. Inspections regarding process quality are even less frequent in home-based settings in Germany and Israel.

Monitoring can create administrative burden and stress for staff if inspections occur too often or if the evaluations are not clearly defined and connected to strategies for improvement. Frequent monitoring of home-based settings can also pose unique challenges, as these settings can be more dispersed, requiring more resources to make inspection visits. Developing a clear monitoring framework can help ECEC settings work continuously towards quality improvement goals, even in the absence of frequent inspections.

Early childhood education and care staff as professionals

ECEC staff working with children under age 3 must address the multiplicity of children's needs and their level of development, which can differ even more than for children in pre-primary education. Staff working with very young children need to cater for these needs and engage in various education and care activities and interactions to foster children's development, learning and well-being. These activities and interactions include accompanying children in a number of routines in their daily life, fostering their cognitive and socio-emotional development, as well as engaging with parents to support children's development and well-being both in ECEC settings and at home.

The ECEC sector for children under the age of 3 needs a range of professionals with different profiles to perform this variety of tasks. In home-based settings, one single staff has to perform the various roles and tasks. In ECEC centres, teachers work in tandem with assistants in many countries, each having different roles and responsibilities. This is the case in Denmark, Germany and Norway among the participating countries, where teachers represent less than half of staff working with children in a pedagogical way. Assistants are prevalent in these countries, as well as other staff such as interns and staff for individual children in some countries. However, the background and training of assistants varies across countries: In Norway, required qualifications vary between assistants and teachers whereas in Germany, staff in both roles often have the same level of educational attainment. In small centres, staff may have to perform a broader set of tasks than in large centres.

Assistants do not exist in Israel, with teachers accounting for a large majority of staff. The lack of distinction between the roles of teacher and assistant in Israel reflects the "educare" approach used in settings for children under age 3. This approach highlights the close connection between education and care for children in this age group.

Different types of staff roles are common in centres for children under age 3

Teachers work in tandem with assistants in Germany and Norway and represent less than 50% of staff in centres

Assistants spend most of their time working directly with children whereas teachers have additional tasks, especially in Norway

Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

Staff working in the sector also have very diverse backgrounds in their education, training and experience. Policies need to adjust to the diversity of situations and characteristics of staff and ensure that all staff benefit from opportunities to develop the skills and knowledge needed to work with very young children.

Policy pointer 7: Ensure that all staff have opportunities and possibilities to develop their competencies throughout their careers

Some studies have found that staff with higher levels of education, and in particular who have pursued education and training after secondary school (ISCED 4 and above), engage in better interactions with children under age 3, such as to foster language development. Findings from TALIS Starting Strong show that staff with a higher educational background make greater use of practices to adapt to children's needs and interest when working with groups of children.

A majority of staff in the four participating countries have pursued education and training after secondary school, but the percentage of staff with a low level of education is not negligible. In centre-based settings, the percentage of staff with secondary school as the highest level of formal education amounts to 19% in Germany, 32% in Norway and 37% in Israel; the percentage for Denmark (with low response rates) is in a similar range. In Germany, almost 60% of staff working in home-based settings have not pursued an education beyond secondary school.

The education background of staff varies across settings and categories of staff and is linked to their role. In Germany, teachers are more likely to have at least a bachelor's degree or equivalent (ISCED level 6 and above) than assistants, but they both spend similar amounts of time working directly with children and working on other tasks. In Norway, almost all teachers have attained at least ISCED level 6 while only a minority of assistants have, and assistants rarely undertake tasks without children (e.g. documenting children's development). In Israel, where there are no assistants, the majority of staff have a post-secondary degree, but less than a bachelor's degree (ISCED level 4 or 5). In countries with integrated systems (Denmark, Germany and Norway), education levels of staff in centres are similar for staff regardless of whether their target group includes a minority or majority of children under age 3.

The topics covered in initial training in Norway are more comprehensive than in Germany, and to an even greater extent, than in Israel. Staff experience in the sector also differs across countries. In Germany and Norway, staff generally have worked several years in the ECEC sector before working with children under age 3 while staff in Israel have had, on average, most of their experience in the ECEC sector with children under age 3.

As staff have different educational backgrounds, experiences, and roles and responsibilities, they need to continue to develop their skills and knowledge throughout their careers in ways that correspond to their needs. A particular focus can be put on ensuring that staff who have not pursued a post-secondary education continue to develop their skills. Staff in home-based settings may be more in need of professional development related to their pre-service educational backgrounds, but they may also lack opportunities to participate in ongoing training due to their long working hours. They may also lack opportunities to learn from peers due to the nature of their work.

All staff need to benefit from training opportunities. The barriers to professional development reported by the largest percentages of staff are that professional development is too expensive and that there are not enough staff to compensate for their absence in the four countries (OECD, 2019[2]).

Flexible forms of training, such as learning from peers and mentoring, can help staff improve their practices with children. These informal forms of professional development do not require release time from working with children, as they can be easily combined with staff's usual schedules. Government also needs to investigate options to lower the financial cost of training for staff in settings or countries where this is an important barrier.

Policy pointer 8: Provide comprehensive training opportunities, including working with diverse families/children with special needs, and encouraging all forms of learning

Professional development should cover the major areas of knowledge needed to work with children. In terms of area of training, staff in the four countries most frequently report a need for professional development in topics such as child development, facilitating creativity and problem solving, and working with children with special educational needs. However, there are differences across countries and settings. In Germany, where a majority of staff in home-based settings have not pursued education beyond secondary school, staff indicate training needs in several core areas, including learning theories.

Working with parents/guardians or families is crucial for this age group and was included in the pre-service training of a majority of staff, albeit to a lesser extent in Israel. In many settings, staff indicate a need for professional development in the area of working with parents/guardians or families, with more than half of staff in centre-based settings in Germany reporting this as an area of moderate or high need. Staff in home-based settings report smaller needs in this area, perhaps due to their closer links with parents.

As staff face a diversity of professional development needs and have very different profiles, a multiplicity of training opportunities, both in terms of format and content, can be offered to them. Work-based learning may have multiple advantages for staff working with young children. It can be adapted to staff's profiles and needs, cover multiple aspects and provide practical experience. In centres, leaders can play an important role in developing a stimulating learning environment for staff through co-operation and exchanges about their practices. Policies can help home-based providers continue to develop and update their skills and knowledge through tailored professional development approaches. These can include providing coaching and mentorship that can take place when children are present.

The status of the profession and shortages of staff

Attracting and maintaining a high-quality workforce is a key challenge for the ECEC sector in general, but even more so in the sector for children under the age of 3. This is due in part to the low status of the profession in many countries, stereotypes such as the profession being only for women, a misunderstanding of the interplay between care and education activities, and a lack of awareness of the importance of the first years of life for development and success later.

The situation has somewhat changed thanks to decades of work on the importance of investing in the early years of life, and public investment in ECEC has increased in many countries. However, this has often benefited pre-primary education. Staff working with children under the age of 3 are still not always seen as professionals.

Most recently, due to the global pandemic, ECEC was no longer available in many countries. The COVID-19 crisis has highlighted the need for settings for children under age 3, but perhaps more importantly, the complexity of working with children from this age and the need for such professionals. For parents with young children, working from home while trying to foster their children's development at the same time was an important source of stress and frustration of not managing to combine the two as successfully as they would have liked. Firms, societies and policy makers may have better realised the importance of settings and staff for children under age 3.

Policy pointer 9: Create options for career progression and ensure salaries are aligned with staff's education, skills and responsibilities

A majority of leaders in Germany and Israel report that staff shortages limit their effectiveness. Similarly, around half of leaders in Denmark (with low response rates), Germany and Israel report that shortages of staff for the number of children enrolled hinder the centre's capacity to provide a quality environment for children "quite a bit" or "a lot". The situation is different in Norway, with a minority of leaders reporting that staff shortages limit their effectiveness or the capacity to provide a quality environment. Staff shortages have implications for staff, as this can increase their workload and lower their opportunities to participate in training. Reducing group sizes by recruiting more staff is indicated as a top spending priority if the budget was increased by 74% of staff in Norway, 78% in Germany and 84% in Israel.

Staff shortages is an important challenge for the ECEC sector as a whole and for settings for children under the age of 3 more particularly. At the same time, part of the demand for ECEC services for the youngest children is unmet. Even though the four participating countries have high ECEC enrolment rates for children under age 3 compared to other OECD countries, there is room to expand enrolment. Attracting more qualified staff is therefore crucial for the sector.

Staff are committed to the sector and express a very high level of satisfaction with their work. Across the four countries, 96-98% of centre-based staff agree or strongly agree that they "enjoy working at this ECEC centre". Similarly, from 94% of centre-based staff in Germany to 97% in Norway agree that "all in all, they are satisfied with their job". Staff in home-based settings in Denmark (with low response rates), Germany and Israel also report very high levels of job satisfaction.

However, satisfaction with salary is low in the four participating countries, particularly among staff in centre-based settings: only 16% of staff in Israel, 29% in Germany and 30% in Norway are satisfied with the salary they receive (Denmark, with low response rates, is similar to Germany and Norway). Salaries to some extent reflect the social value attached to a job. In line with low satisfaction with salaries, relatively small percentages of staff feel valued by society: from 37% of staff in centre-based settings in Germany to 58% in Norway. In Israel, staff working with children under age 3 feel less valued by society than their colleagues in pre-primary education, but no difference is observed for the other countries (OECD, 2019[2]). However, these percentages are above those for lower secondary education where only 26% of teachers feel valued by society, on average, in OECD countries (OECD, 2020[3]).

Staff are satisfied with their work, but not with their salaries

Nearly all staff enjoy their jobs and overall satisfaction with work in the sector is high

Fewer than one-third of staff are satisfied with their salaries and most do not feel society values their work

Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

In order to attract more candidates to the sector, it is important to raise the status of the profession and break down stereotypes about who can join the profession.

The ECEC sector for children under age 3 needs to offer attractive financial packages to the various categories of staff while at the same time ensuring that staff receive the education and training needed to work as child development professionals. The sector is often supported by private funding, even more than pre-primary education as is the case in Israel among the participating countries. If increases of staff salaries are financed through higher fees paid by families, inequality in access may rise. Most countries have limited room for increased public expenditure, and ECEC budgets compete with the budgets of both other levels of education and other public policies. However, increasing public investment in ECEC for the youngest children can be a priority for many countries given the benefits for the children enrolled, parents, and societies and economies more broadly. Increased public investment can target staff salaries and the quality of education and training for staff to ensure that staff can work as professionals and to raise the status of the profession.

It is also important to develop pathways from other professions (e.g. in the education or health sectors) to an ECEC career and create options for career progressions to make the career more attractive. Pathways from other professions can be facilitated by systems to recognise experience and skills acquired in other jobs or informally, for instance for staff working in the informal sector. The recognition of skills and abilities acquired informally can also facilitate career progression, for instance from assistants to roles with more responsibilities. In addition, communication campaigns can raise awareness of broader pools of candidates and help fight stereotypes, for instance to attract more qualified candidates and more men to the profession.

Policy pointer 10: Investigate how to address some sources of work stress

As staff working with children under age 3 have different working environments and conditions depending on their role and the type of setting where they work, they also have different sources of stress.

In the four participating countries, sources of stress reported as important by the largest percentages of staff in centres include a lack of resources, having too many children in their classroom/playroom, having extra duties due to absent staff and having too many additional duties. A large percentage of staff also indicate excessive work documenting children's development as a source of stress in Denmark (with low response rates) and Germany in both centre-based and home-based settings. In home-based settings in Germany, staff also indicate keeping up with changing requirements from authorities and too much

administrative work as important sources of stress while in Israel, being held responsible for children's development, well-being and learning is an important source of stress for almost half of home-based staff.

Policies need to take into account the multiplicity of the working conditions and environments. Addressing staff shortages can help mitigate stress in centres. Providing training options to staff who lack knowledge and competencies in core areas of children's development can help low-qualified staff feel more confident in their work. As children under age 3 require continuous attention, tasks to be performed without children can generate stress. Setting aside some time for these tasks through a better allocation of roles within centres and regulated working hours in contact with children in home-based settings can help staff perform this variety of tasks. While it is important to monitor several aspects of process and structural quality, the administrative burden should not be too high, especially in home-based settings or small centres in which it is more difficult for staff to have time without children.

References

OECD (2020), *TALIS 2018 Results (Volume II): Teachers and School Leaders as Valued Professionals*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/19cf08df-en. [3]

OECD (2019), *Providing Quality Early Childhood Education and Care: Results from the Starting Strong Survey 2018*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/301005d1-en. [2]

OECD (2019), *TALIS Starting Strong 2018 Database*, OECD, Paris, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm. [1]

2 Policy context and governance of early childhood education and care settings for children under age 3

This chapter first explores the policy context of early childhood education and care (ECEC) settings for children under age 3. It compares enrolment and expenditure levels across OECD countries and highlights the relationship between female participation in the labour force and the demand for ECEC services for children under age 3. The chapter then describes the governance of the ECEC settings of the countries participating in TALIS Starting Strong and investigates how they are funded, what responsibilities their leaders have and what barriers limit their effectiveness.

Key messages

- Enrolment rates and expenditures on early childhood education and care (ECEC) services for children under age 3 vary to a greater extent than they do for older children across OECD countries. The four countries participating in the Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) for settings for children under age 3 have some of the highest enrolment rates for children age 2 among OECD countries, ranging from 67% in Germany to around 90% in Denmark and Norway. These rates are lower for children age 1 in Denmark and Germany, but not in Israel and Norway. Children below age 1 are rarely enrolled in ECEC in Denmark, Germany and Norway, but in Israel 31% of children under age 1 attend ECEC. Among OECD countries with available data, expenditures per child are particularly high in Norway and low in Israel.
- The ECEC sector for children under age 3 experienced strong growth from 2005 to 2017, with enrolment rates in many countries, including Germany, doubling. In countries participating in TALIS Starting Strong, supply does not meet demand and the majority of settings have a waiting list of children who could not yet be enrolled.
- Among countries participating in TALIS Starting Strong, Israel is the only one with a split system, in which ECEC services for children under age 3 are under the responsibility of the Minister of Labour rather than the Minister of Education. In Denmark, Germany and Norway, children under age 3 are enrolled in integrated centres serving children ages 0-5 while in Israel, children under age 3 are only with other very young children. Home-based settings exist in all countries, although they were excluded from the survey in Norway, as very few children attend home-based settings there.
- Most centre-based settings in all four participating countries receive government funding and a majority of them collect fees from parents. Donations are a frequent source of funds in Germany only.
- In centre-based settings, staff and leaders have “significant responsibility” for most tasks included in the survey, particularly for choosing the materials and activities used in the centre, but less frequently for establishing salaries. Yearly monitoring most often happens for finance rather than for inspecting process quality, including the quality of the staff’s interactions with children.
- Leaders of centre-based settings often report staff shortages and staff absences as the most important barriers to their effectiveness, with the exception of Norway, where fewer leaders report any such barriers.

Introduction

Early childhood education and care (ECEC) for children under age 3 is perhaps the sector of education that varies the most across OECD countries in terms of enrolment rates, investment, structure and governance. This is also an area of education for which little is known due to the complexity of the sector and its recent development in some countries, which makes it difficult to obtain internationally comparative data.

The development of ECEC for children under age 3 reflects countries' beliefs and their policy choices concerning female participation in the labour market, the age at which children can benefit from attending an ECEC setting compared to staying at home, and the overall cultural context of taking care of the youngest children. These factors determine the size and type of public investment for families with very young children. For the youngest children in particular, some countries invest in parental leaves to enable children to stay at home while others invest in ECEC settings. At the age of 5, most children in OECD countries are enrolled in ECEC, but for the youngest children, large variation exists across countries. Differences in the policy context means that the age composition of children enrolled in ECEC for the youngest children varies across countries, which has implications for the practices staff use with children and the skills and knowledge staff need to have.

ECEC for children under age 3 is a complex sector, often with several types of settings co-existing within countries, such as centre-based and home-based or public and private and multiple ministries involved. The organisation of the sector can influence the quality of ECEC provided. TALIS Starting Strong asks leaders of settings for children under age 3 in the four participating countries (Denmark, Germany, Israel and Norway) to provide information about the funding, governance and ownership of ECEC centres. It also asks leaders about their perceptions regarding factors that may hamper the effectiveness of the sector. This information helps better understand the institutional and policy context of ECEC for children under age 3 and how this context can shape how staff work with children and the provision of quality ECEC.

The four countries participating in TALIS Starting Strong for children under age 3 differ in many of these aspects. The objectives of this chapter are twofold. First, it discusses the main factors that shape the development of ECEC services for children under age 3 in OECD countries based on several sources of data to put the four participating countries into perspective. This discussion includes a description of the policy context of ECEC services for children under age 3 and compares them across OECD countries on a number of dimensions, including enrolment rates and expenditure.

Second, the chapter presents the results from TALIS Starting Strong on aspects of the governance of the sector that are specific to each country. Different types of ECEC settings exist, and TALIS Starting Strong includes both centre-based and home-based ECEC settings for children under age 3. Using leaders' reports from TALIS Starting Strong, the chapter finally presents how settings are organised and funded, what responsibilities leaders have, how settings are monitored, and what barriers limit leaders' effectiveness. Both the wider OECD perspective and the policy and institutional context for the four participating countries are useful to better understand the findings presented in the other chapters of this report.

Disparities in the scope of early childhood education and care services for children under age 3

To a much greater extent than for older children, the education and care of children under age 3 is shared among several actors, including families and ECEC services (OECD, 2019[1]). Enrolment in ECEC services for children under age 3 is a matter of choices and constraints for families involving cost, availability, personal preferences and labour force decisions, within a policy context specific to each country. As a result, ECEC services differ greatly across countries in terms of coverage and expenditures, and reflect very different policy choices.

Enrolment of children under age 3 in early childhood education and care settings

In contrast to ECEC at the pre-primary level, ECEC services for children under age 3 are rarely close to reaching universal coverage. In 2017, the enrolment rate for children age 2 in ECEC registered services was 60% across OECD countries, markedly below 87%, the corresponding rate for children ages 3-5

(Figure 2.1). Importantly, the younger the child, the less likely s/he is to be enrolled in an ECEC service with, across OECD countries, enrolment rates of 40% for children age 1 and 10% for children under age 1.

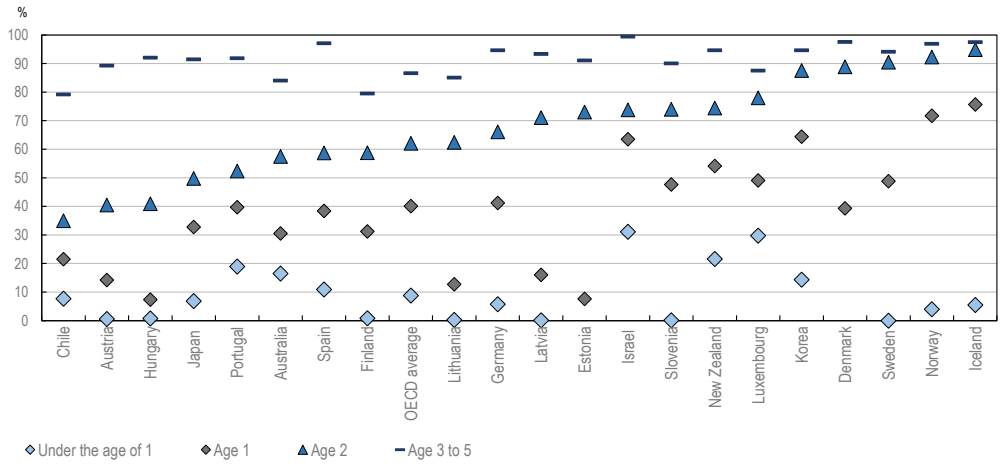
These averages hide large variation both within and across OECD countries in the use of ECEC services for the youngest children (Figure 2.1). In Korea and in several Nordic countries, including Denmark and Norway, enrolment rates for children age 2 are around 90% and close to those observed for older children. In Germany and Israel, these enrolment rates are lower, but still high, with two-thirds of all children age 2 in ECEC services. Among all OECD countries, these rates are below 50% only for Chile, Austria and Hungary, but they are still sizeable. This disparity is more important when considering children age 1. In many countries, such as Estonia and Lithuania, enrolment rates are very low, indicating that ECEC services at this age are the exception, even though a majority of these children would be enrolled one year later.

In a few other countries, such as Israel and Norway, a majority of children age 1 are already enrolled in ECEC services. In most countries, including Denmark, Germany and Norway, children who are not yet 1 are not enrolled in ECEC services. At this early age, some countries may favour subsidising parental leave policies rather than investing in ECEC. Enrolment rates for this age group reach 30% only in Israel and Luxembourg. These national averages do not show regional variations within a country, which can be substantial (OECD, 2017[2]).

Importantly, these enrolment rates reflect the current supply of registered ECEC services and potentially mask unserved needs for some parts of the population. In particular, these enrolment rates vary across a family's social background in some countries. Enrolment rates for families from the lowest income tertile (the first part of the income distribution divided into three parts) are lower in Denmark and Norway, but not in Germany (OECD, 2020[3]).

Figure 2.1. Enrolment rates in early childhood education and care services, by age

Enrolment rates of children under age 3 in registered early childhood education and care settings, by age, OECD countries, 2017



Notes: Countries for which data are not available at all ages are not shown. Figures account for all children in registered settings, including both ISCED 0 settings and other registered early childhood education and care services that do not meet the criteria for being classified as ISCED 0.
Source: OECD (2019[4]), "Enrolment rates of children under the age of 3 in early childhood education and care, by type of service and age (2005, 2010 and 2017)", in: *Education at a Glance 2019*, https://doi.org/10.1787/888933977771.

StatLink https://doi.org/10.1787/888934147175

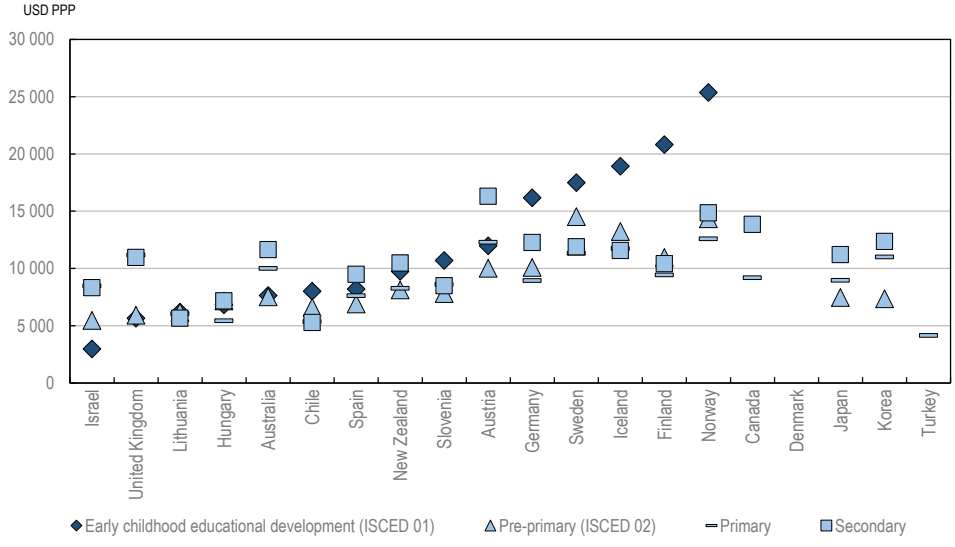
Expenditure on early childhood education and care settings for children under age 3

For countries with available data, the level of expenditures per child in ECEC services for children under age 3 is higher than for other levels of education in Germany and some Nordic countries (Figure 2.2). In Israel, private and public expenditures per child amount to less than half of expenditures per pupil in secondary education. Nordic countries and Germany stand apart with expenditures across all levels of education beyond ISCED 01 generally above USD 10 000 in purchasing power parities (PPP) per student. These countries have even higher expenditures for children under age 3, at USD 16 000 in PPP per child in Germany and up to USD 25 000 in PPP per child in Norway, almost seven times the amount spent in Israel. Such a disparity from one country to another is not found for other levels of education. The comparisons in this report of countries participating in TALIS Starting Strong, namely Denmark (for which data on expenditures are not available), Germany, Israel and Norway, have to be interpreted in light of these figures. These important differences in expenditure levels may drive the levels of resources available in each country, as measured in TALIS Starting Strong.

The cost of ECEC for individual families is different from these national expenditure figures. Family costs depend on the number of young children in each family as well as the distribution of costs between families, governments and other sources of ECEC funding (e.g. philanthropic donations). In OECD countries, the net cost of ECEC can be a high burden on family incomes, especially in English-speaking countries (OECD, 2020[3]).

Figure 2.2. Educational expenditures at different levels of education

Public and private annual expenditure per pupil at different levels of education in equivalent USD converted using purchasing power parities, 2016



Note: Since data for ISCED 01 expenditures are not available for several OECD countries, OECD averages cannot be computed.
Sources: OECD (2019[5]), "Financing of early childhood education and care (ISCED 0) and change in expenditure as a percentage of GDP (2012 and 2016)", in: *Education at a Glance 2019*, https://doi.org/10.1787/888933977828, OECD (2019[6]), "Indicator C1. How much is spent per student on educational institutions?", in: *Education at a Glance 2019*, https://doi.org/10.1787/888933981058.

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Recent evolution and unmet demand

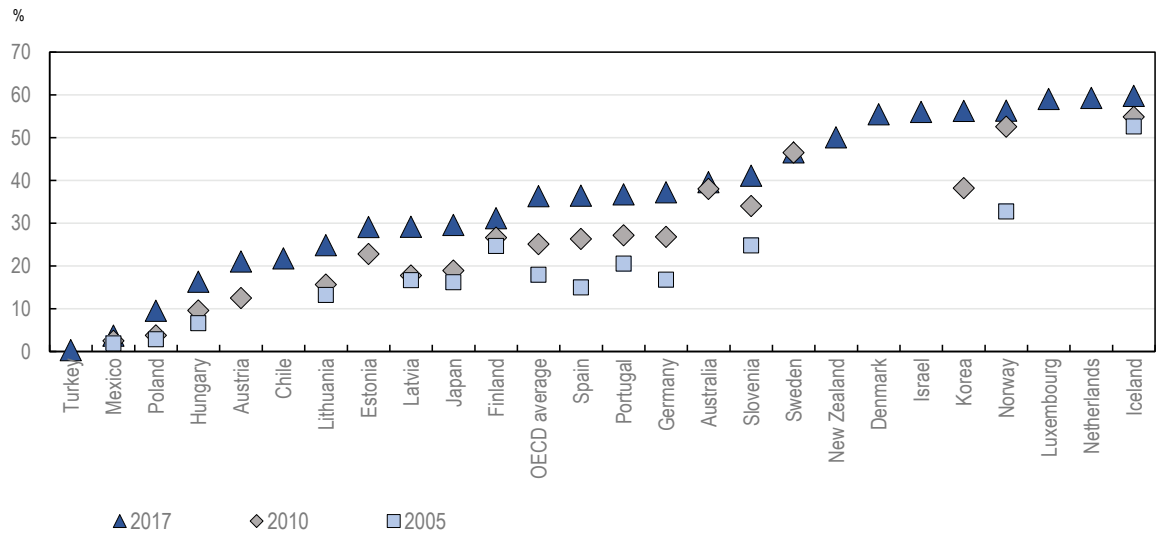
The large differences in enrolment rates observed in ECEC services for children under age 3 suggest that in many countries the sector has, and may still experience, strong growth, with an increasing demand for services. These trends are important to assess the potential pressure on the ECEC sector.

Enrolment of children under age 3 in ECEC services dramatically increased on average across OECD countries from 2005 to 2017 (Figure 2.3). In several countries, enrolment rates doubled during this period. In Norway, 33% of children under age 3 were enrolled in ECEC services in 2005, compared to 56% in 2017. In Germany, the corresponding increase was from 16% to 37%. Similar increases took place in Japan, Portugal and Spain.

This increase in enrolment was driven by the combination of two trends. First, policy makers became more and more aware of the long-term benefits of ECEC for the youngest children and invested in the sector accordingly (Shuey and Kankaraš, 2018[7]). Second, changes in female participation in the labour market acted as a lever to further extend ECEC services (Thévenon, 2013[8]). This sharp increase in the demand for ECEC services can potentially create difficulties in the recruitment of skilled workers (see Chapter 3). In countries where birth rates or migration of families with young children have increased, stable enrolment rates hide an expansion of ECEC services, which may also have been challenging to countries.

Figure 2.3. Evolution of enrolment of children under age 3 in early childhood education and care services

Enrolment rates of children under age 3 in early childhood education and care (2005, 2010 and 2017)



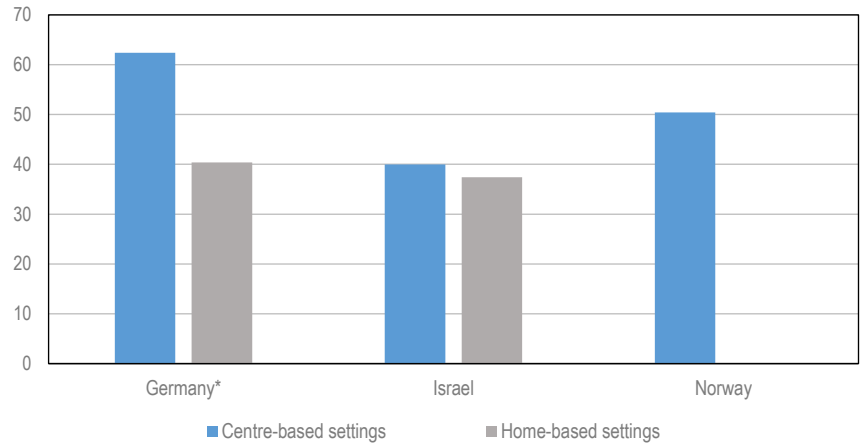
Source: OECD (2019[4]), "Enrolment rates of children under the age of 3 in early childhood education and care, by type of service and age (2005, 2010 and 2017)", in: *Education at a Glance 2019*, https://doi.org/10.1787/888933980944.

StatLink https://doi.org/10.1787/888934147213

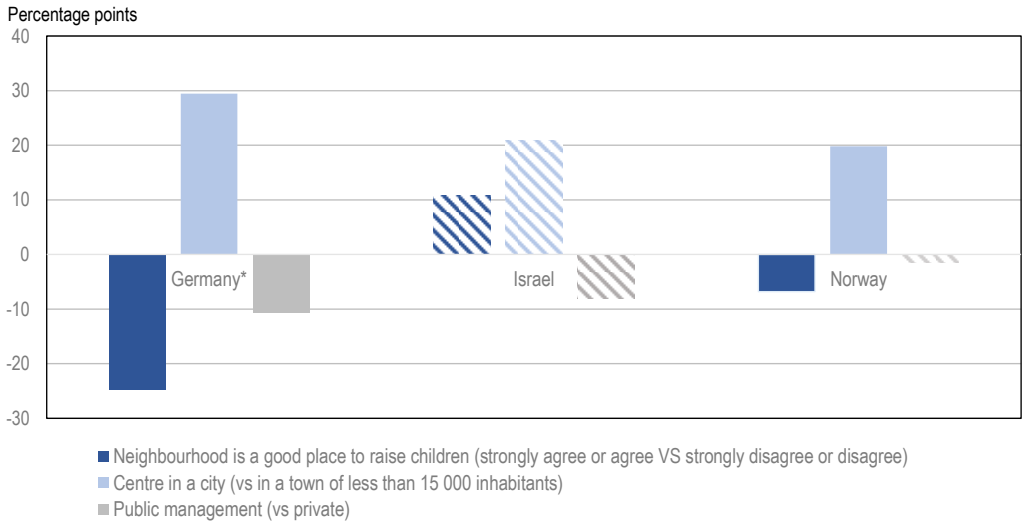
TALIS Starting Strong asks leaders of settings serving children under age 3 whether they had children on a waiting list to enrol. This indicator helps understand whether the setting capacity is large enough to satisfy the needs of families, and therefore gives an overall assessment of the extent to which the current size of the sector meets the demand of families for its service.

Figure 2.4. Unmet demand in early childhood education and care services for children under age 3

A. Percentage of leaders reporting there were children who wanted to enrol and were placed on a waiting list



B. Adjusted differences in the percentage of centre leaders reporting there were children who wanted to enrol and were placed on a waiting list, according to centres characteristics



*Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: Home-based settings serve a small number of children in Norway and were not included in the survey. Adjusted differences in Panel B were estimated with an OLS regression, including all three variables using the existence of waiting list of children who could not enrol as the dependent variable. Significant differences are shown in solid colour.
Source: OECD (2019[9])), TALIS Starting Strong Database 2018, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147232

In Germany, Israel and Norway, a large proportion of centre leaders report the existence of such a list, with up to 60% of German centre leaders reporting so (Figure 2.4). Waiting lists are less prevalent in home-based settings in Germany, but are present in approximately 40% of settings, similar to home-based settings in Israel. Beyond the question of the fairness of the process for allocating places, an insufficient supply of ECEC creates issues for families with children who cannot enrol and have to search for alternative solutions that might impose extra constraints on their budget and family and work organisation.

A comparison of centre leaders' reports according to centre characteristics gives insight into which centres face the greatest pressure to meet demand. In Germany and Norway, leaders in centres located in large cities more often have to put children on a waiting list (Figure 2.4). In addition, in Germany, centres located in neighbourhoods that leaders do not consider as good to raise children are also more likely to put children on a waiting list. This raises some equity concerns given that these neighbourhoods tend also to be those with more social difficulties. In all three countries, public and private centres are similar in terms of waiting lists.

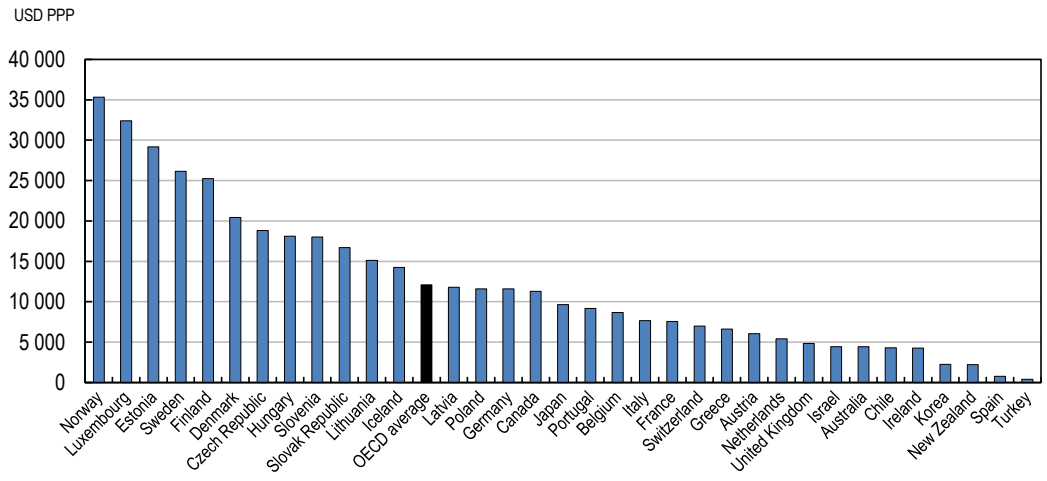
Alternatives to early childhood education and care services for children under age 3

Besides ECEC services, families have two other possibilities for the education and care of their young children: family care and informal childcare. For families where both parents were initially working, family care entails a costly reduction in labour force participation, with one of the parents, oftentimes the mother, working part-time or quitting the labour force. ECEC services for children under age 3 are part of larger government programmes designed to foster child well-being and development, but also female labour force participation and fertility.

In most countries, parents are entitled to paid parental leaves at childbirth. Figure 2.5 summarises how much countries fund parents for caring for their youngest children, although the specifics of these parental leaves vary according to country, both in terms of the duration and the parent's gender (OECD, 2020[3]). These benefits are the highest in Nordic countries, where they exceed USD 20 000 per live birth. However, they vary a lot, with an average of USD 12 000 across OECD countries, to less than USD 5 000 for a number of countries, such as Chile or Korea. They barely exist in Spain or Turkey.

Figure 2.5. Public expenditures on parental leaves

Public expenditure on maternity and parental leaves per live birth, in equivalent USD converted using purchasing power parities, 2015



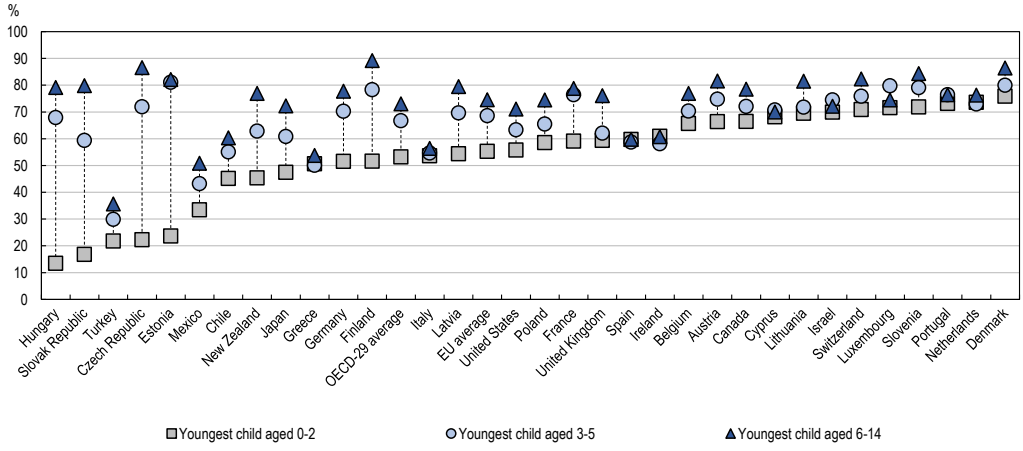
Source: OECD (2018[10]), "Summary of paid leave entitlements available to mothers", *OECD Family Database*, www.oecd.org/els/soc/PF2_1_Parental_leave_systems.xlsx.

StatLink https://doi.org/10.1787/888934147251

In many countries, mothers of children under age 3 are likely to decrease their labour force participation (Figure 2.6). The most dramatic drop is found in Hungary, where only 12% of mothers of children under age 3 work, while most of those who do not will come back to the labour force once their children are above 3, since almost 70% of mothers with their youngest child aged between 3 and 5 work. Such important gaps in female employment are also observed in the Czech Republic, Estonia and the Slovak Republic. In many countries, including Finland and Germany, lower but still sizeable decreases in labour force participation exist for mothers of children under age 3. Importantly, employment rates for mothers whose youngest children are between ages 3 and 5, an age at which most enrol in ECEC services, are closer to those of women with older children. This suggests that many mothers who stopped working resume their participation in the labour market once their children enrol in ECEC services. These figures do not account for the difference between mothers who decide to work part-time in order to look after their children and those who work full-time.

Figure 2.6. Employment rates for women with children

Employment rates for women aged 15-64 by age of the youngest child, 2014 or latest year available



Note: Data are not available for Norway.
Source: OECD (2016[11]), "Maternal employment rates, 2014 or latest available year", *OECD Family Database*, www.oecd.org/els/soc/LMF_1_2_Maternal_Employment.xlsx.

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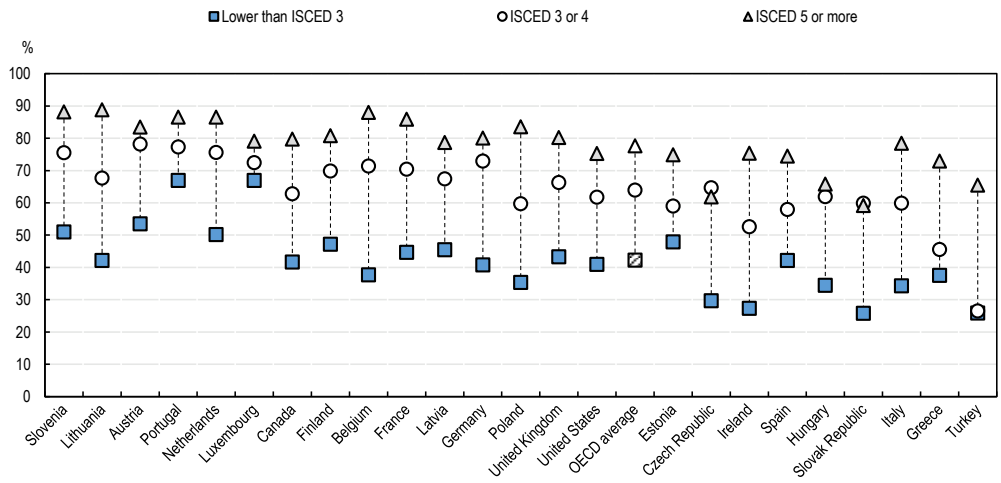
ECEC services for children under age 3 are more likely to be used by families in which the mother works. The pattern of mothers' employment by education clearly shows that those with a tertiary education (ISCED 5 or more) are more often employed than those with a lower education (Figure 2.7). This is especially true with respect to mothers who did not finish upper secondary school (less than ISCED 3), who have an employment rate of 40% on average across OECD countries, half of the one observed for mothers with a tertiary education. The research literature suggests that the impact of ECEC services on a child's development is the highest for children from the least educated families (Ladd, 2017[12]). The extension of ECEC services to these families would bring a double dividend, first by improving their children's prospects, and second by facilitating the participation of mothers in these families in the labour force.

Figure 2.7. Maternal employment rates by level of education

Employment rates for women (15-64 years old) with children (aged 0-14) by level of education, 2014 or latest year available



Note: Data are not available for Denmark, Israel or Norway.
Source: OECD (2016[11]), "Maternal employment rates, 2014 or latest available year", *OECD Family Database*, www.oecd.org/els/soc/LMF_1_2_Maternal_Employment.xlsx.

StatLink https://doi.org/10.1787/888934147289

Organisation and governance of settings for children under age 3 in participating countries

The four countries participating in TALIS Starting Strong for settings for children under age 3 differ in the organisation of these settings. More than for other levels of education, ECEC relies on funding and governance from a mix of sources, and settings for children under age 3 in particular often have specific standards and regulations, even when governed by the same authority as ECEC for older children (OECD, 2017[2]; 2018[13]). The mix of types of ECEC settings and levels of oversight for these settings can create networks of services that are adapted to local needs and demand, but can also pose challenges for ensuring consistent quality throughout the system. This section describes the key differences in the organisation, governance and funding of settings for children under age 3 in participating countries before describing the different authorities with responsibility for the management of ECEC settings, approaches to monitoring these settings and limits to leaders' effectiveness.

Governance and types of settings

Israel stands out among the countries participating in TALIS Starting Strong for children under age 3 as having the only split ECEC system. In Denmark, Germany and Norway, a single national ministry oversees ECEC for children from birth or age 1 until entry into primary school, and in some cases this national authority is responsible for both ECEC and education at the primary level and beyond. In Israel, the Ministry of Labour, Welfare and Social Affairs has oversight for ECEC settings for children under age 3 and the Ministry of Education has oversight for ECEC settings for children from age 3 and up. This report focuses only on settings under the authority of the Ministry of Labour, Welfare and Social Affairs.

The governance of ECEC settings for children under age 3 has implications for the organisation of these settings. In Denmark, Germany and Norway, some settings include both children under age 3 and over age 3. In Israel, ECEC settings serve children up to and including age 3 (Table 2.1). In each of these settings, children can be further grouped in classrooms/playrooms according to their age within the under 3 age group. In Israel, three age groups are distinguished in the formal system: babies from 6 to 15 months; young toddlers from 16 to 24 months; and toddlers from 25 to 36 months. These different arrangements result in ECEC settings with varying proportions of children under age 3 in the participating countries (see Chapter 3), with implications for the practices used to support process quality (see Chapter 4).

Table 2.1. Organisation and governance of early childhood education and care (ECEC) settings for children under age 3

Country	Name of ECEC setting in English	Name of ECEC setting in local language	Age range covered	Centre-based or home-based	Name of highest authority in charge
Denmark					
	Nursery	Vuggestue	0-2	Centre-based	Ministry for Children and Education
	Home-based day care	Dagpleje	0-2	Home-based	
	Integrated day care	Integrerede institutioner	0-5	Centre-based	
Germany					
	ECEC centre for all age groups 0-6/school entry	(Kinder-)Tageseinrichtung für Kinder aller Altersgruppen	0-6/school entry	Centre-based	Federal Ministry for Family Affairs, Senior Citizens, Women and Youth
	ECEC centre for children under 3	(Kinder-)Tageseinrichtung für Kinder unter 3, called Krippe	0-3	Centre-based	
	Family day care	Kindertagespflege	0-6	Home-based	
Israel					
	Day care centre	מעון	4 months[1] to 3 years	Centre-based	Ministry of Labour, Welfare and Social Affairs
	Family day care centre	משפחתון	4 months[1] to 3 years	Home-based	
Norway					
	Kindergarten	Barnehage	1-5	Centre-based	Ministry of Education and Research
	Family kindergarten	Familiebarnehage	1-5	Home-based	

1. Formal entrance age is 6 months. However, settings routinely accept children aged from 4 months onwards.
Note: Home-based settings in Norway were not included in the survey and are therefore shaded in grey.
Source: OECD (2019[14]), "OECD Network on Early Childhood Education and Care: Quality beyond Regulations survey", Internal document, OECD, Paris.

Formal ECEC for children under age 3 can be either centre-based or home-based, meaning it can occur either in a centre or in a provider's home. These two types of settings exist in the four participating countries, but home-based settings were not included in TALIS Starting Strong in Norway because they serve only a small number of children (Table 2.2). Home-based providers of ECEC typically work with a smaller number of children compared to the number of children who can attend centre-based settings.

Table 2.2. Percentage of home-based settings in TALIS Starting Strong

Sampling estimates of different setting types, home-based compared to centre-based

	Percentage of home-based settings among all settings represented in TALIS Starting Strong
Germany*	16%
Israel	60%
Denmark**	16%

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in bias in the estimates reported and limit comparability of the data.
Note: Home-based settings serve a small number of children in Norway and were not included in the survey.
Source: OECD (2019[9]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147327

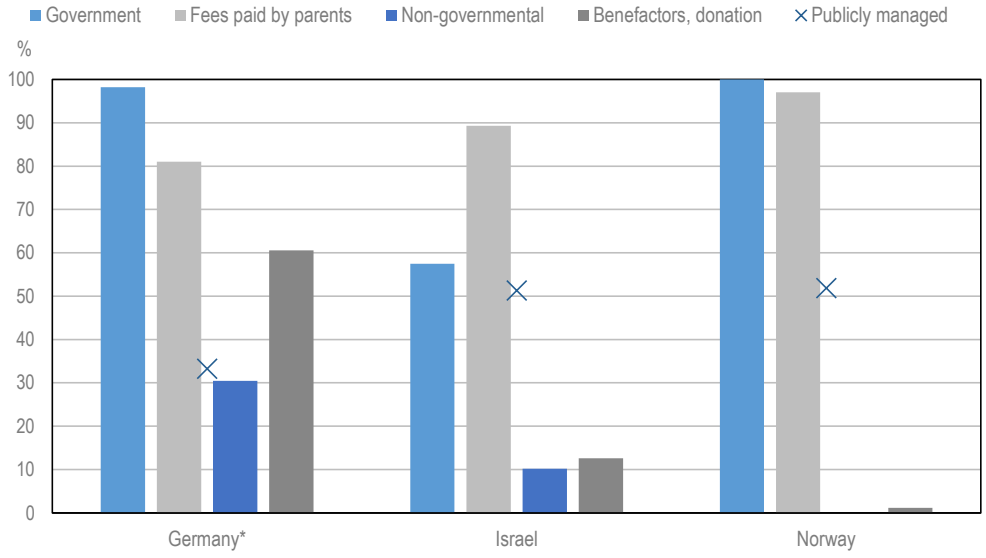
Funding

Most settings in TALIS Starting Strong receive government funding (Figure 2.8). However, fewer settings in Israel report receiving any government funding, with only 57% of centre-based and 78% of home-based leaders reporting this type of funding, compared to over 95% of leaders in the other countries. Fees paid by parents are also a common source of funding in settings for children under age 3 in most countries and settings, with the exception of Denmark (with low response rates) and home-based settings in Germany, where fewer than half of leaders report this type of funding. Funding from non-governmental organisations and from benefactors and donations are most common in centre-based settings in Germany and less common across other settings and countries. Notably, while the integrated systems in Denmark, Germany and Norway have similar funding profiles for settings for children under age 3 and pre-primary settings, in Israel it is less common that settings for children under age 3 receive government funding and these settings more often collect fees from parents than is the case for pre-primary settings (OECD, 2019[15]).

TALIS Starting Strong asks ECEC centre leaders whether the centre is publicly or privately managed, referring to the organisation responsible for the day-to-day management of the centre regardless of the ownership or funding sources of the centre. A publicly managed ECEC setting is one in which day-to-day management is under the responsibility of a public education authority, government agency or municipality. The setting is considered as privately managed when this day-to day management is under the responsibility of a non-governmental organisation, private person or institution (e.g. church, synagogue or mosque, trade union, business). Publicly and privately managed settings can both rely on government funding as well as funding from other sources. In addition, both publicly and privately managed settings can be supervised and regulated by public authorities. Publicly managed settings represent approximately half of centre-based settings in Israel and Norway (Figure 2.8), and are even more common among home-based settings in Israel (78%). In Germany, about one-third of centre-based settings and no home-based settings are publicly managed. In Denmark (with low response rates), a majority of settings are publicly managed.

Figure 2.8. Sources of funding and type of management in centre-based early childhood education and care settings

Percentage of leaders who report the following sources of funding for their centres and public vs. private management



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Source: OECD (2019[9]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147308

Management and monitoring of early childhood education and care settings

Responsibility for various aspects of centre management can fall under the auspices of different authorities. TALIS Starting Strong asks leaders whether key administrative functions are managed by them and staff at their settings, by a governing board, or by a government authority (including local, regional and national authorities). Leader and staff responsibility for these various tasks is often associated with stronger reported process quality (OECD, 2019[15]). In centre-based settings for children under age 3, staff and leaders have "significant responsibility" for most tasks included in the survey, and particularly around choosing the materials and activities used in the centre (Table 2.3). In Germany, governing boards have a central role across tasks, often working with centre-based leaders and staff. In Denmark, Germany and Norway, administrative authorities have some responsibility for setting staff salaries whereas in Israel, these higher authorities do not have significant responsibility for any aspects of centre management, according to leaders.

Table 2.3. Responsibilities of centre leaders, governing boards and administrative authorities in early childhood education and care settings

Centre-based leader reports of stakeholders that most commonly have "significant responsibility" for the following tasks

	Germany*	Israel	Norway	Denmark**
Appointing or hiring staff	Centres with boards	Mostly centres	Mostly centres	Centres, sometimes with boards
Dismissing or suspending staff	Boards, sometimes with centres	Centres or boards	Mostly centres	Mostly centres
Establishing staff salaries	Authority or boards	Boards, sometimes centres	Authority	Authority or centres
Deciding on budget allocations within the centre	Centres, sometimes with boards	Centres, sometimes with boards	Centres, sometimes with boards	Centres, sometimes with boards
Establishing monitoring plans for children's development	Mostly centres	Mostly centres	Mostly centres	Mostly centres
Approving children for admission	Centres, sometimes with boards	Centres, sometimes with boards	Centres, sometimes with authority	Mostly authority
Choosing which materials/toys are used	Centres	Centres	Centres	Centres
Deciding which activities to offer to children	Centres	Centres	Centres	Centres

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in bias in the estimates reported and limit the comparability of the data.
Notes: Leader reports of the stakeholders with "significant authority" are not mutually exclusive. Information summarised in the table reflects the most typical response or combination or responses within each country from among the three response options: leaders and/or other members of staff; governing board; local/regional/national authority.
Source: OECD (2019[9]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

Monitoring ECEC settings through external evaluation helps ensure minimum standards are met and can improve the quality of the education and care provided. However, according to leaders in centre-based settings for children under age 3, external evaluation does not necessarily occur on a regular basis. Across the four countries participating in TALIS Starting Strong, audits regarding the financial management of centres is the most common type of monitoring among the strategies leaders were asked about (Table 2.4). In Israel, two-thirds of leaders report such audits occur at least annually and the share of leaders reporting this in the other countries is even higher. Other aspects of monitoring are more common in Israel compared to the other participating countries. Notably, fewer than half of leaders in Germany and Norway report inspections regarding process quality (e.g. quality of interaction with children, content of activities) occur at least annually. Such inspections can be an important way to promote quality and ongoing improvement within centres.

The monitoring of ECEC settings is also important to ensure homogeneous quality across settings. In Germany and Israel, data suggest that inspection of the four elements considered in the survey occurs less frequently in home-based settings than in centre-based ones, especially the inspection of facilities in Germany and of process quality in Israel. Monitoring for home-based settings can be challenging given that these settings can be quite small and dispersed and therefore require disproportionate resources to ensure regular evaluation.

Table 2.4. External evaluation of centre-based early childhood education and care settings

Percentage of leaders reporting that each of the following types of external evaluation occur at least once per year

	Centre-based settings				Home-based settings		
	Germany*	Israel	Norway	Denmark**	Germany*	Israel	Denmark**
Inspection regarding structural quality (e.g. child-teacher ratio, qualification levels of staff)	47%	79%	68%	55%		73%	
Inspection regarding process quality (e.g. quality of interaction with children, content of activities)	42%	76%	37%	56%		62%	
Inspection of facilities (e.g. space, equipment, furniture, health and safety)	68%	88%	53%	53%		81%	
Audit regarding financial management	74%	66%	85%	85%		24%	

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in bias in the estimates reported and limit the comparability of the data.
Notes: Colours vary from dark grey (0%) to white (50%) to dark blue (100%). Home-based settings serve a small number of children in Norway and were not included in the survey. Due to the limited sample sizes, which resulted in large standard errors, only colours (no percentages) are displayed for staff working in home-based settings in Denmark and Germany.
Source: OECD (2019[9]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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Due to the complexities of the organisation, governance, management and oversight of the ECEC sector, leaders can face many challenges in achieving their desired outcomes at work. TALIS Starting Strong asks leaders about the barriers to their effectiveness. In centres for children under age 3, staff absences and staff shortages are among the most common barriers leaders report in all four countries (Table 2.5). In general, leaders in Norway report fewer limits on their effectiveness compared with leaders in the other countries. In Germany, in addition to concerns about staff absences and shortages, more than half of leaders report that government regulation and policy is a barrier to their effectiveness. As ECEC settings in Germany are largely governed by the *Länder* with only some regulations coming from the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth, leader responses may reflect the complexities of operating in a federal system and may also vary by region.

Table 2.5. Barriers to leaders' effectiveness in centre-based early childhood education and care settings

Percentage of centre-based leaders who report the following limit their effectiveness "quite a bit" or "a lot"

	Germany*	Israel	Norway	Denmark**
Inadequate budget and resources	37%	39%	25%	65%
Government regulation and policy	57%	32%	19%	30%
Staff absences	78%	70%	29%	42%
Staff shortages	62%	73%	18%	46%
Lack of parent involvement and support	31%	14%	0%	16%
Lack of opportunities and support for my own professional development	18%	24%	1%	17%
Lack of opportunities and support for staff professional development	24%	37%	6%	32%

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in biases in the estimates reported and limit the comparability of the data.
Note: Colours vary from dark blue (0%) to white (50%) to dark grey (100%).
Source: OECD (2019[9]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147365

Conclusion

This chapter presented the policy and institutional context that shapes the provision of ECEC for children under age 3 in the four countries participating in TALIS Starting Strong. Compared to other OECD countries, enrolment rates in ECEC settings are particularly high in Denmark and Norway at age 2 and in Israel at age 1 and below. Germany is in-between, with relatively high enrolment rates at the ages of 2 and 1. When taking into consideration both public and private expenditure, Germany and Norway spend more than many other countries per child in ECEC settings for children under age 3 while Israel spends relatively little.

The organisation of the provision of ECEC for children under age 3 varies greatly across the four participating countries, and especially between Israel and the three other countries. The integrated systems in Denmark, Germany and Norway mean that ECEC settings often include children age 3 and older, in addition to children under age 3; however, this is not the case in Israel and the settings discussed in this report include only children under age 3 or age 3. In addition, home-based settings in Israel represent a majority of the settings for children under age 3, in contrast to Denmark and Germany, where home-based settings account for a smaller segment of ECEC provision. The larger share of settings that are privately managed and greater involvement of governing boards in the management of centres in Germany compared with the other participating countries is also relevant for understanding differences in structural and process quality. These different profiles of ECEC organisation and governance in the participating countries are important for understanding the findings presented in the subsequent chapters.

The findings from this chapter suggest several areas for policies:

1. **Ensure equitable access to quality ECEC.** The supply of ECEC for children under age 3 does not adequately meet the growing demand. TALIS Starting Strong data show that many settings maintain waiting lists of children who want to enrol and that settings in urban areas are more likely to have waiting lists than those in more rural areas. Expanding the supply of ECEC, especially in some areas, is an important challenge for policy makers to ensure that inequalities do not accumulate for some groups of children. This requires attracting staff to the profession (see Chapter 3), facilitating the process for opening centres, diversifying the type of ECEC provision and possibly, increasing public spending on the sector.
2. **Give attention to the cost and funding of high-quality ECEC.** As ECEC can benefit children, societies and economies as a whole, there is good reason for investing more in ECEC, and especially in ECEC for children under age 3. At the same time, the extremely large differences in the combined public and private expenditures per child suggest that several types of organisation can be considered, with different cost implications. As most governments face important budget constraints that are even greater as a consequence of the COVID-19 crisis, policy makers will need to carefully consider the cost of ECEC to balance the two main objectives of expanding enrolment and ensuring quality.
3. **Adequately monitor ECEC settings.** Because of the complexity of the sector, well-designed external evaluation is crucial to ensure minimum quality standards are met and differences in quality between types of settings do not develop. Monitoring must provide opportunities to improve quality rather than focusing solely on verifying that standards are being met. At the same time, policies must balance regular monitoring to encourage quality improvement with the administrative burden placed on ECEC settings and avoid frequent inspections that are simply compliance checks. This means that regular monitoring must address aspects of process quality, such as staff interactions with children, their ability to adapt practices to individual children's needs and interests, and support for parent/guardian engagement in both centre-based and home-based settings.

References

Ladd, H. (2017), "Do some groups of children benefit more than others from pre-kindergarten programs?", in *The Current State of Scientific Knowledge on Pre-Kindergarten Effects*, Brookings & Duke Center for Child and Family Policy, Washington, DC & Durham, NC. [12]

OECD (2020), *OECD Family Database*, OECD, Paris, http://www.oecd.org/social/family/database.htm (accessed on 15 March 2020). [3]

OECD (2019), *Education at a Glance 2019: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/f8d7880d-en. [1]

OECD (2019), "Enrolment rates of children under the age of 3 in early childhood education and care, by type of service and age (2005, 2010 and 2017)", in *Education at a Glance 2019*, OECD, Paris, https://doi.org/10.1787/888933977771. [4]

OECD (2019), "Financing of early childhood education and care (ISCED 0) and change in expenditure as a percentage of GDP (2012 and 2016)", in *Education at a Glance 2019*, OECD, Paris, https://doi.org/10.1787/888933977828. [5]

OECD (2019), "Indicator C1. How much is spent per student on educational institutions?", in *Education at a Glance 2019*, OECD, Paris, https://doi.org/10.1787/888933981058. [6]

OECD (2019), "OECD Network on Early Childhood Education and Care: Quality beyond Regulations Survey", *Internal document*, OECD, Paris. [14]

OECD (2019), *Providing Quality Early Childhood Education and Care: Results from the Starting Strong Survey 2018*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/301005d1-en. [15]

OECD (2019), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm. [9]

OECD (2018), *Education at a Glance 2018: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eag-2018-en. [13]

OECD (2018), "Summary of paid leave entitlements available to mothers", in *OECD Family Database*, OECD, Paris, http://www.oecd.org/els/soc/PF2_1_Parental_leave_systems.xlsx. [10]

OECD (2017), *Starting Strong 2017: Key OECD Indicators on Early Childhood Education and Care*, Starting Strong, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264276116-en. [2]

OECD (2016), "Maternal employment rates, 2014 or latest available year", in *OECD Family Database*, OECD, Paris, http://www.oecd.org/els/soc/LMF_1_2_Maternal_Employment.xlsx. [11]

Shuey, E. and M. Kankaraš (2018), "The power and promise of early learning", *OECD Education Working Papers*, No. 186, OECD Publishing, Paris, https://dx.doi.org/10.1787/f9b2e53f-en. [7]

Thévenon, O. (2013), "Drivers of female labour force participation in the OECD", *OECD Social, Employment and Migration Working Papers*, No. 145, OECD Publishing, Paris, https://dx.doi.org/10.1787/5k46cvrgnms6-en. [8]

3 Characteristics of settings and staff in early childhood education and care for children under age 3

This chapter describes the characteristics of staff and settings of the early childhood education and care sector serving children under age 3 and compares how resources are mobilised differently in Denmark, Germany, Israel and Norway. It explores the location, size and workforce of centre-based settings and analyses leader reports of the resource shortages they face. The chapter then gives a profile of staff working with children under age 3, including their experience, educational attainment, professional development needs and job satisfaction. It also investigates how staff differ across home-based and centre-based settings and according to the proportion of children under age 3 that they work with.

Key messages

- In Israel, children under age 3 are in early childhood education and care (ECEC) centres serving only children in this age range. In Denmark, Germany and Norway, most children under age 3 are in integrated ECEC centres also serving children over age 3. Centres are typically bigger in Germany than in Denmark or Norway but serve a smaller proportion of children under age 3. Target groups (the first group of children staff were working with on the last working day before the day of the survey) more often include only children under age 3 in Norway than in Germany.
- A majority of centres are located in neighbourhoods offering a good environment to raise children, with only 10% of leaders in Germany and Israel and almost none in Norway reporting the contrary. In Israel, leaders who report that centres are not located in a good neighbourhood often mention litter lying around, while in Germany they report an accumulation of difficulties, including vandalism and ethnic tensions. In all countries, centres are found in cities of all sizes.
- Despite the fact that centres in Germany and Israel serve more children, Norwegian centres comprise more staff than centres in Germany and Israel. Staff's educational background and roles vary across countries. In Norway, the difference between teachers and assistants is pronounced: almost all teachers have attained at least a bachelor's degree or equivalent (ISCED level 6), while only a minority of assistants have, and assistants rarely undertake tasks without children (e.g. documenting children's development). In Germany, teachers are somewhat more likely than assistants to have at least a bachelor's degree or equivalent (ISCED level 6 and above), and teachers and assistants spend similar amounts of time working directly with children. There are no assistants in Israel, and the majority of staff have a post-secondary degree distinct from a bachelor track (ISCED 4 or 5). In Germany and Norway, staff generally have worked several years in the ECEC sector before working with children under age 3.
- Almost all centre staff in Germany and more than 70% of staff in Israel and Norway had elements covering working with children in their initial training. Topics covered in initial training in Norway are more comprehensive than those in Germany, and to an even greater extent than those in Israel. In all countries, staff most frequently report a need for professional development in topics such as child development, facilitating creativity and problem solving, and working with children with special educational needs.
- A large proportion of centre leaders in Germany and Israel report a shortage of staff compared to the number of children enrolled. In addition, a majority of leaders in Israel report a shortage of qualified staff. Staff's opinion about budget increases overwhelmingly favour improving salaries, especially in Israel, and funding professional development. Leaders and staff in Norway report fewer shortages.
- Staff in all four countries feel very satisfied working in their ECEC centre, even though they do not feel valued enough by society and are dissatisfied with their salary. Staff in all countries report that a lack of resources is an important source of stress. In Germany, extra duties due to absent staff and excessive work documenting children's development are also frequently reported to be a source of stress, while in Norway, the number of children in the classroom or playroom is the most frequently reported source of stress.
- In Germany and Norway, where all or most centres are integrated across age groups, staff characteristics do not vary with the proportion of children under age 3 in the target group.
- In Germany and Israel, staff in home-based settings tend to work more hours per week than staff in centre-based settings. They are also less likely to have reached a level of education equivalent to ISCED 6 or more.

Introduction

The Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) provides internationally comparable information about settings serving children under age 3 and the staff they employ. The survey covers centre-based settings in Denmark (with low response rates), Germany, Israel and Norway, and home-based settings in Denmark (with low response rates), Germany and Israel. Centre leaders provide information on the main characteristics of centres, such as their size, location and workforce composition, and also report on the difficulties they are facing, while staff in all settings give extensive information about their educational backgrounds, their working conditions and well-being.

This chapter focuses on structural aspects of quality and the human resources that are mobilised in ECEC settings serving children under age 3. Staff practices with children and their capacity to create a good environment to foster child development depend on their own ability and experience, but also on the kind and amount of resources they have at their disposal.

This chapter first explores the characteristics of ECEC settings, including the age mix of children under and over age 3 in different countries, the characteristics of the children served, and the location of ECEC settings. It then describes the size of centre-based settings in terms of the number of children served and how the size of the workforce relates to the centre's size, before analysing more specifically leader reports of human and material resources and the type of activities provided to parents. Next, the chapter focuses on staff pre-service training and the type of professional development staff would need to improve the quality of the education and care they provide. Finally, staff working conditions and well-being are approached through the perspective of both job satisfaction and the different sources of stress they report. When possible, comparisons are made with home-based settings.

Characteristics of early childhood education and care settings

Age mix of children in early childhood education and care settings for children under age 3

The four countries that participated in TALIS Starting Strong for settings serving children under age 3 have different types of ECEC provision. In Israel, children attend centre-based settings that only serve children under age 3. In contrast, most centre-based settings in Denmark and Germany and all in Norway are integrated, meaning they serve children from all ages until the start of primary school. Integrated centres can support continuity for children, parents and staff and help leaders shape consistent management practices across age groups. Nonetheless, the specific needs of children under age 3 may be neglected to some extent if they are significantly less well represented than older children.

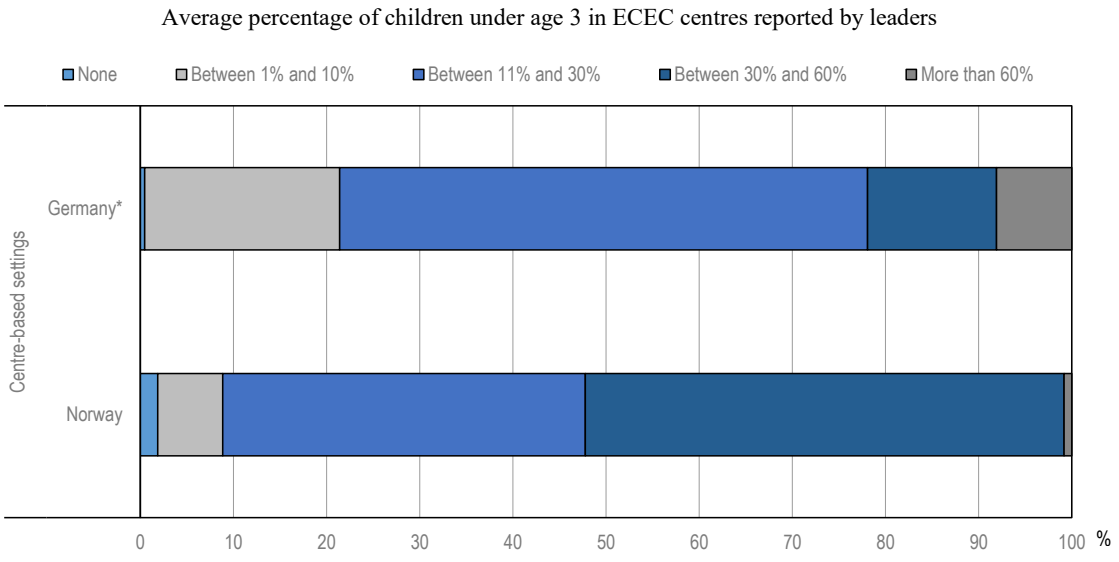
Integrated centres in Denmark, Germany and Norway serve children of all ages up to entry in primary school. In these countries, children under age 3 only account for a minority of children in such centres. This is in part because in these three countries, the under age 3 category only includes children ages 1 and 2 while the category of older children includes children aged 3, 4 and 5. The older children category thus naturally represents a larger percentage of children. In addition, enrolment rates in ECEC for younger children are systematically lower than rates for older children. As a result, practices and characteristics measured at the centre level generally concern a population of children of which those under age 3 constitute only a minority. According to the survey, the average percentage of children under age 3 in centre-based settings is lower in Denmark and Germany than it is in Norway.

The proportion of children under age 3 varies from one centre to another, depending on the number of families in need of ECEC services and the centre's capacity. Information about the type of centre (integrated or not) is not available in TALIS Starting Strong, but non-integrated centres will fall into the category of centres with more than 60% of children under age 3. As all centres are integrated in Norway,

this category is almost empty (Figure 3.1). In Germany, non-integrated centres account for no more than 8% of all centres. Denmark (with low response rates) is similar in this respect.

Figure 3.1 confirms that centres in Norway tend to have a much greater proportion of children under age 3 than centres in Germany; a sizeable proportion of German centres serve a low proportion of children under 3. Nearly half of centres in Norway have a share of children under age 3 between 30% and 60%; this is about three times as many as in Germany. In a large majority of German centres, less than 30% of the children are under 3. In about one centre out of five in Germany, only 10% of children (or less) are under age 3.

Figure 3.1. Percentage of early childhood education and care centres with the following shares of children under age 3 in countries with integrated centres



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: Centres are not integrated in Israel and serve only children under age 3.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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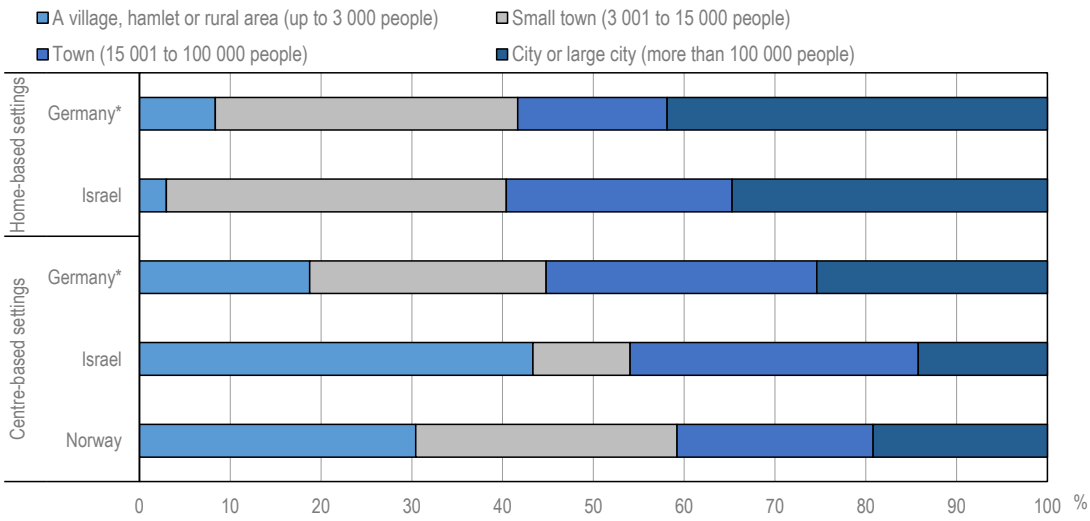
Location of early childhood education and care settings

ECEC settings serving children under age 3 are spread across both rural and urban locations (Figure 3.2). Setting location is reported by leaders, and in the case of German and Israeli home-based leaders, this location is the staff's home in which ECEC services are provided. All three countries – Germany, Israel and Norway (and in Denmark as well, with low response rates) – feature centre-based settings across all sizes of locations. In Germany (and in Denmark, with low response rates), the location of home-based settings reported by leaders is broadly comparable to that of centre-based settings, showing that home-based and centre-based settings generally cover the same geographic areas. In Israel, a large proportion of centre-based settings are located in villages (more than 40%), while only 3% of home-based leaders are located in such locations. Staff homes could nonetheless be located in villages.

Figure 3.2. Percentage of early childhood education and care settings by geographical location

According to leaders



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: Home-based settings serve a small number of children in Norway and were not included in the survey.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database,* http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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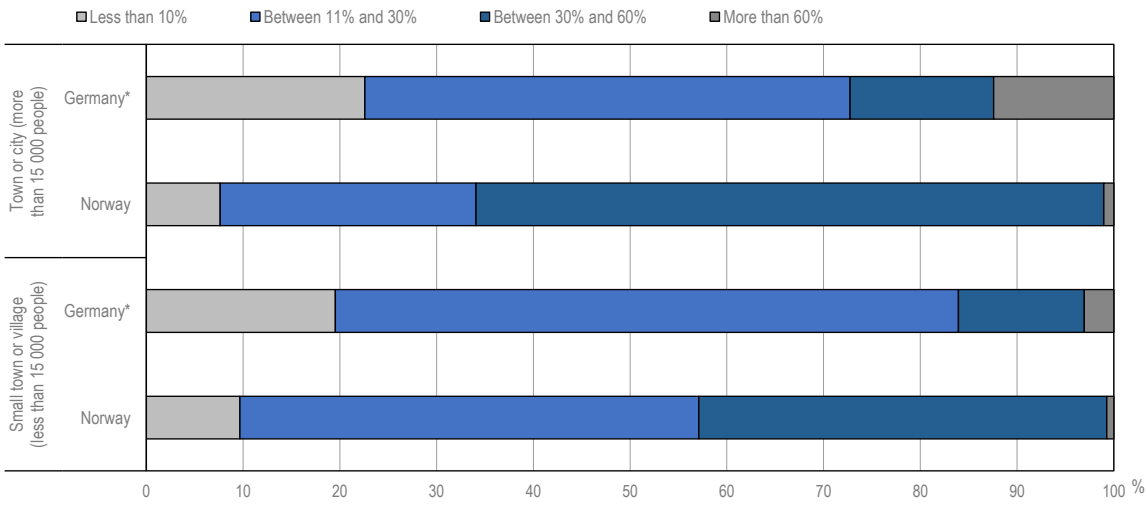
In Germany and Norway, integrated centre-based settings in small towns or villages with less than 15 000 inhabitants tend to have a lower proportion of children under age 3 than those in larger towns or cities (Figure 3.3). In Norway, 66% of centre-based settings located in larger towns or cities serve roughly equal proportions of children under and over age 3, compared to 42% in smaller towns (Denmark, with low response rates, displays a similar pattern). In Germany, the proportion of centre-based settings with more than 60% of children under age 3 (likely to be non-integrated settings) is 13% in larger towns or cities and only 3% in smaller towns or villages. Combined with the lower proportion of centre-based settings with a waiting list in smaller towns (see Chapter 2), these differences suggest a lower demand of ECEC services for children under age 3 in smaller towns. This lower demand could be driven by a higher proportion of young mothers not working or more frequent use of informal childcare.

Figure 3.3. Percentage of children under age 3 in early childhood education and care centres and type of location in countries with integrated centres

According to leader, by type of location



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: Centres are not integrated in Israel and serve only children under age 3.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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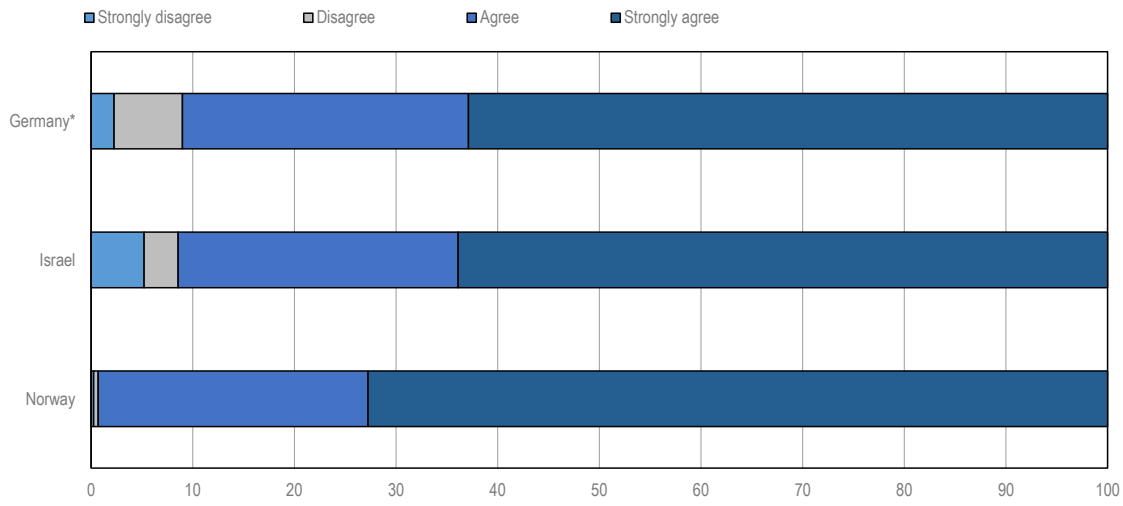
The neighbourhood quality of centre-based settings provides information on two different aspects of ECEC settings. First, the neighbourhood quality of the centre is associated with the conditions and challenges staff face in their daily work with children in the centre. Second, centre neighbourhood quality is related to the social and family environment of the children enrolled in the centre. To interpret the data, one should keep in mind that the existence of centre-based settings in more difficult neighbourhoods would show that families living in deprived areas can have access to ECEC services. However, the absence of leaders reporting poor neighbourhood quality suggests either a lack of provision of services in these areas or a good neighbourhood quality across the country.

The survey reveals centre leaders' individual assessment of the quality of the neighbourhood as a good place to bring up children (Figure 3.4). Across all three countries, leaders overwhelmingly agree (or strongly agree) that the centre neighbourhood is a good environment to bring up children, with a vast majority (60-75%) even strongly agreeing. In Germany and Israel, about 10% of leaders disagree or strongly disagree their centre neighbourhood is a good environment to bring up children. In Norway, almost no leaders report that their centre neighbourhood is not a good environment to raise children.

Figure 3.4. Neighbourhood quality of early childhood education and care centres

Percentage of ECEC centre leaders who agree that the centre is located in a good neighbourhood to bring up children



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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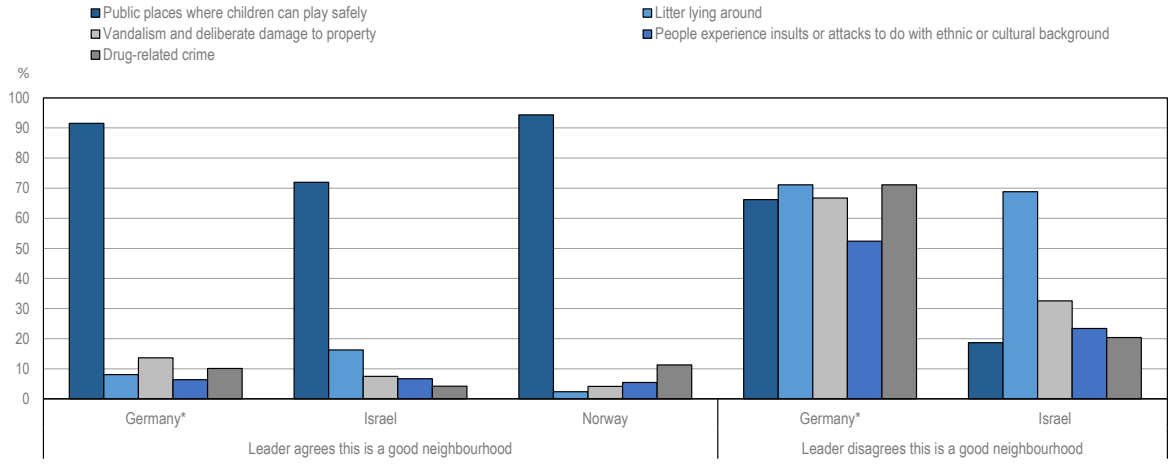
In addition to rating neighbourhoods as a good place to raise children, neighbourhood quality can be assessed along many other dimensions, which raise different policy challenges. TALIS Starting Strong includes a set of questions about specific characteristics of centres' neighbourhoods. The proportion of leaders agreeing with five statements, depending on their answer about the overall quality of the neighbourhood, helps inform the reason why a neighbourhood may be considered to be less good (Figure 3.5). Across all countries, good neighbourhoods are alike. Centre leaders reporting a good neighbourhood also agree or strongly agree that there are public places where children can safely play. Correspondingly, generally less than 10% of them agree with negative statements related to criminality ("drug-related crime" or "vandalism and deliberate damage to property"), to cleanliness ("there is litter lying around") or to ethnic tensions ("people experience insults or attacks to do with ethnic or cultural background"). In Norway, given the absence of reported poor quality neighbourhoods, this favourable environment concerns nearly all centres.

Contrastingly, among leaders in Germany and Israel that do not believe their neighbourhood is a good place to raise children, opinions diverge on more specific statements. While in Germany a majority of these leaders still report there are public places where children can safely play (more than 60%), in Israel less than 20% of leaders agree with this statement. Leaders in Germany agree more frequently with statements related to criminality (drugs and vandalism) and ethnic tensions than leaders in Israel. However, in both countries, a majority of leaders who believe their neighbourhood is a good place to bring up children report there is litter lying around. These profiles suggest an accumulation of disadvantages in the neighbourhoods of some German centres (Denmark, with low response rates, is similar), while the neighbourhoods of some Israeli centres present more concerns about safety in addition to the presence of litter. These results should be interpreted with caution because of the small sample sizes (i.e. few centre leaders have a poor opinion of the neighbourhood around their centre) and therefore the lack of precision of these statistics.

Figure 3.5. Aspects of the neighbourhood quality of early childhood education and care centres

Percentage of centre leaders who agree or strongly agree with the following statements about the centre neighbourhood, broken down by opinion of overall neighbourhood quality to bring up children



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: Statistics for centres in Norway in which leaders disagree their centre is in a good neighbourhood to bring up children are not shown because of the very small size of the subsample.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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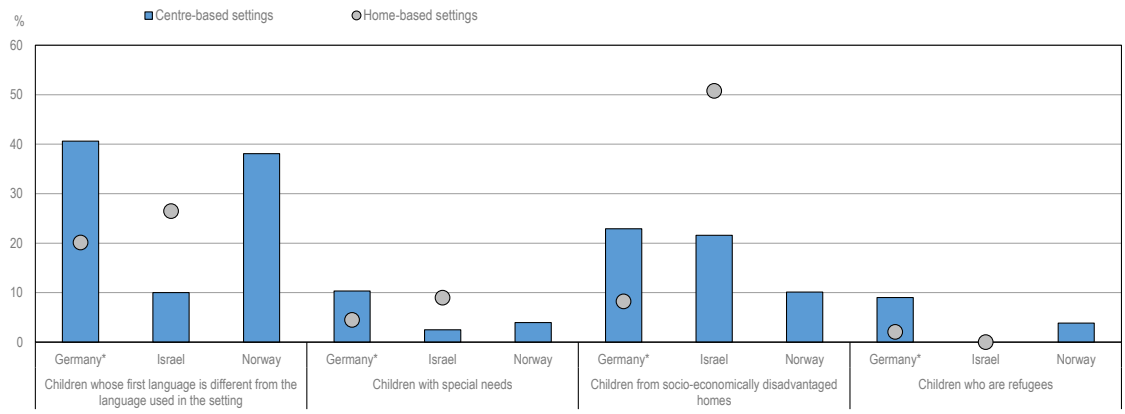
Characteristics of children in early childhood education and care settings

Leaders report the proportion of children in their centres with the following characteristics: with a different first language than that of the centre, who have special needs, are refugees or come from socio-economically disadvantaged households (Figure 3.6). Children with these characteristics can require specific actions, skills or training on behalf of the centre's staff in order to implement adapted practices and support high-quality ECEC for all children. In centre-based settings, about 40% of leaders in Germany and Norway report having at least 10% of children with a different first language, compared to only 10% of leaders in Israel. The proportion of children with special needs or who are refugees rarely exceeds 10% across all three countries. In both cases, the highest prevalence is observed in German centres, and even here, no more than 10% of leaders report having many children with special needs or refugees in their centres. Leaders in Denmark (with low responses rates) more frequently report more than 10% of children with special educational needs in their centres than the other participating countries. TALIS Starting Strong refers to socio-economically disadvantaged homes as homes lacking the necessities or advantages of life, such as adequate housing, nutrition or medical care. About 20% of centre leaders in Germany and Israel report that at least 10% of children come from such homes, whereas in Norway only approximately 10% of leaders report having many children from socio-economically disadvantaged homes in their centres. These different trends across countries reflect each country's socio-demographic make-up.

Figure 3.6. Characteristics of children in early childhood education and care settings according to type of setting

Proportion of settings with more than 10% of children with the following characteristics according to leaders, by type of setting



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: Home-based settings serve a small number of children in Norway and were not included in the survey.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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A comparison of home-based and centre-based settings in Germany and Israel shows that the two types of settings tend to serve different segments of the population. In Israel, a larger percentage of home-based settings include a significant percentage of children whose first language is different from the language used in the setting, who are from socio-economically disadvantaged homes or who have special needs. This finding could suggest that some children have less access to centre-based settings. In Germany, where home-based settings serve a relatively small proportion of the population, the proportion of children with these various characteristics is less than what leaders report in centre-based settings. This pattern suggests more even access to centres across diverse groups.

Early childcare education and care setting size and resources

This section provides an overview of the different types of resources available in ECEC settings and how they are distributed in each country, starting with the most important: human resources.

Setting size, number of staff and categories of staff

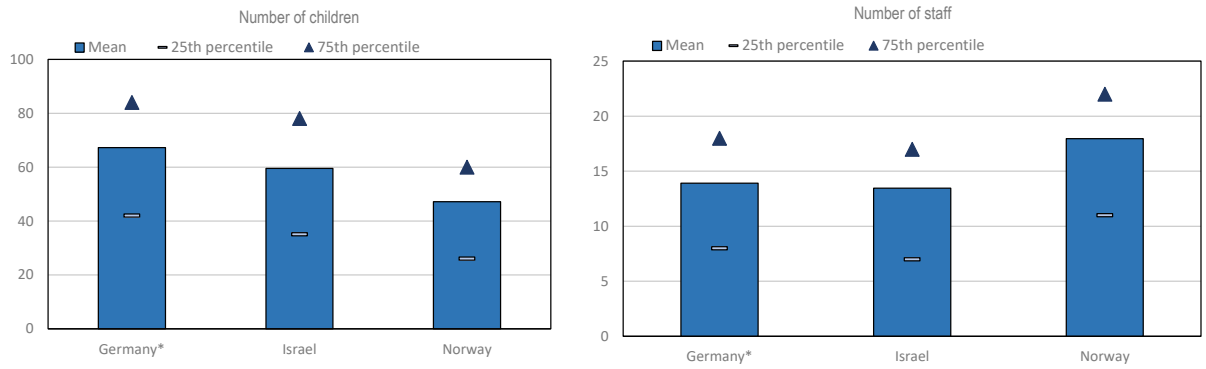
Centre size is described in TALIS Starting Strong using the number of children in the centre. The size of centre-based settings can influence staff working conditions, leader management style and workload, and the amount and diversity of financial and human resources available. Centre size also determines the scope of co-operation possibilities between staff and shapes the daily experience of children.

The number of children in centres varies both across and within countries (Figure 3.7). On average, German and Israeli centres are larger (60 children or more) than Norwegian centres (47 children). In Germany and Norway, where centres are typically age-integrated, these figures account for children of all ages from one to five. While Norwegian centres serve fewer children than German centres, a larger proportion of children are under 3. Centre sizes vary extensively within countries, with, for instance, 25% of German centres serving less than 40 children while 25% of centres serve more than 80 children.

TALIS Starting Strong also includes information on the number of staff per centre, as reported by leaders (Figure 3.7). As leaders' reports do not distinguish between staff working part-time or full-time, these figures can differ from administrative data sources. Staff counts are generally close to 15 on average. However, from one country to another, average staff counts do not follow children counts. In particular, while Norway features the smallest centres with respect to the number of children, staff counts are the highest on average, which reflects the important investment Norway has made in ECEC services (see Chapter 2) as well as the strong representation of children under age 3, who require more individualised attention.

Figure 3.7. Size distribution of centre-based settings

Average number of staff and children per centre, according to leaders



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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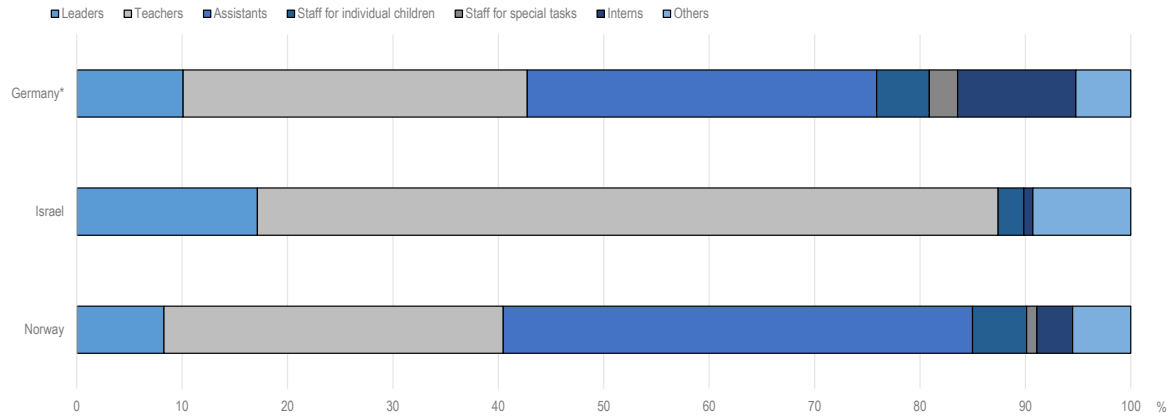
In Germany and Norway, where all or most centres are integrated, not all staff necessarily work with children under age 3. In TALIS Starting Strong, leaders report about all staff, including those who do not work with children under age 3. As a result, it is not possible to know the proportion of staff in integrated centres that work with children under age 3. However, only staff working with children under age 3 are included in the target population of staff. Staff working in integrated centres, but not with children under age 3, are excluded.

TALIS Starting Strong includes several categories of staff. The main categories are leader, teacher and assistant, with teachers defined as having the most responsibilities for children in the classroom/playroom. Interns, staff for individual children and staff for special tasks are also included as well as an "other" category. The distribution of the workforce across these categories in centre-based settings varies across countries, reflecting different types of working organisation (Figure 3.8). Germany and Norway have a similar proportion of teachers (about one-third) among the workforce, but the percentage of assistants is smaller in Germany. In Denmark (with low response rate), centres employ more teachers than assistants. German centres show a relatively high share of interns. The centre organisation is different in Israel, with no staff serving as assistants. More than 70% of the workforce in Israel is reported to be teachers, implying that the management of daily work with children could be less hierarchical. Other types of staff are rare. In Germany and Norway, about 5% of the workforce are reported to be staff working with individual children (only 2% in Israel). Staff for special tasks represent an even smaller proportion of the workforce.

Figure 3.8. Human resources in centre-based settings

Share of staff categories in ECEC centres, according to leaders



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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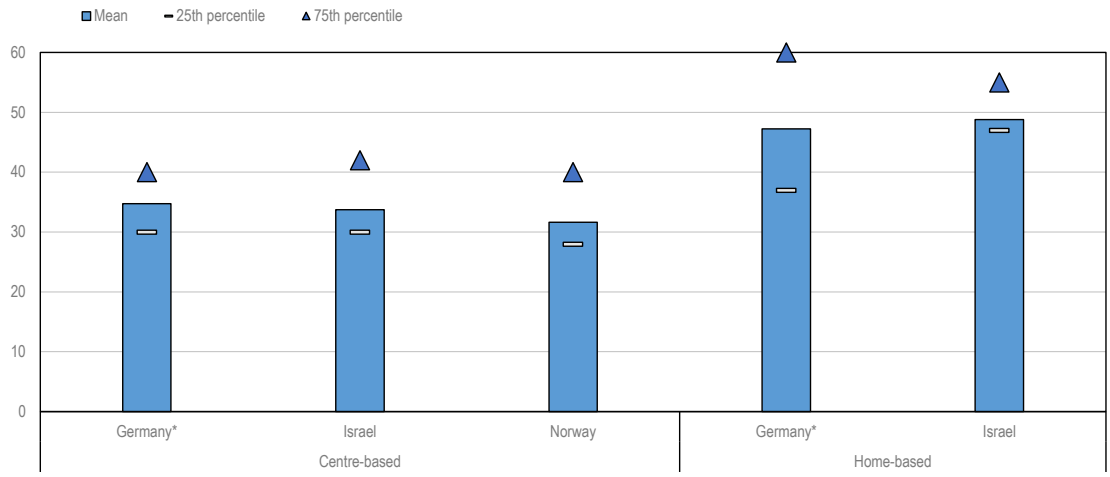
Working hours

Across countries, staff working in centre-based settings report working a similar number of hours per week: 32-35 (Figure 3.9). Within each country, the range is limited, with half of the staff working 30-40 hours per week. Staff in Norwegian centres work a bit less than in Germany and Israel. However, staff in home-based settings report having much longer working weeks than staff in centre-based settings (47 hours on average in Germany and 49 in Israel). In Germany, one in four home-based staff reports working at least 60 hours a week.

Figure 3.9. Total weekly working hours for all staff in early childhood education and care settings

Average weekly working hours, according to staff, by type of setting



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: Home-based settings serve a small number of children in Norway and were not included in the survey.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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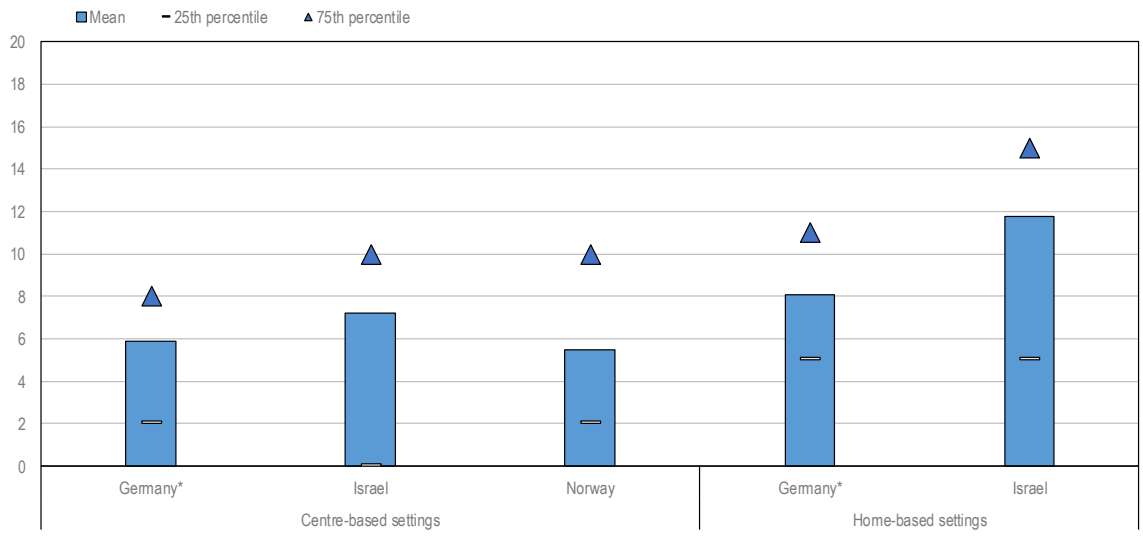
An important aspect of working hours is the distinction between time spent with children and time spent on other tasks. Time not spent with children can be dedicated to tasks closely related to children, such as the preparation of activities to do with children or collaboration with parents and colleagues, or it can be focused on more administrative tasks. In centre-based settings, staff typically spend six hours per week on tasks outside of working with children in Germany and Norway and slightly more in Israel (seven hours), accounting for 17-22% of total working hours (Figure 3.10). The number of hours spent on other tasks is higher in home-based settings, reaching 8 hours in Germany and 12 in Israel. Staff in Israeli home-based settings spent thus one-fourth of their working hours away from children; however, their average number of hours spent working directly with children is still greater than the total average hours worked by staff in centre-based settings.

The number of hours spent on tasks aside from working with children also varies across staff. Some staff spend almost all of their time working directly with children. In German and Norwegian centres, 25% of staff spend less than two hours a week working without children while in Israel 25% do not report any work without the presence of children. Other staff spend many hours per week working on tasks that do not directly involve children. In Israel and Norway, 25% of staff spend more than ten hours a week on tasks not with children (eight hours in Germany). Importantly, leaders only account for a minority of these 25%, since leaders comprise less than 10% of the workforce. This pattern suggests a division of tasks across staff within a centre. In home-based settings, the number of hours not spent with children also varies a lot across staff, but the 25% of staff who spend the least amount of time without children still spend more than four hours per week on tasks without children. In home-based settings, the possibilities to allocate tasks across staff are more constrained and there is a minimum amount of work that is better done in the absence of children.

Figure 3.10. Number of weekly working hours not spent with children

Average number of hours per week not spent with children, according to staff, by type of setting



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: Home-based settings serve a small number of children in Norway and were not included in the survey.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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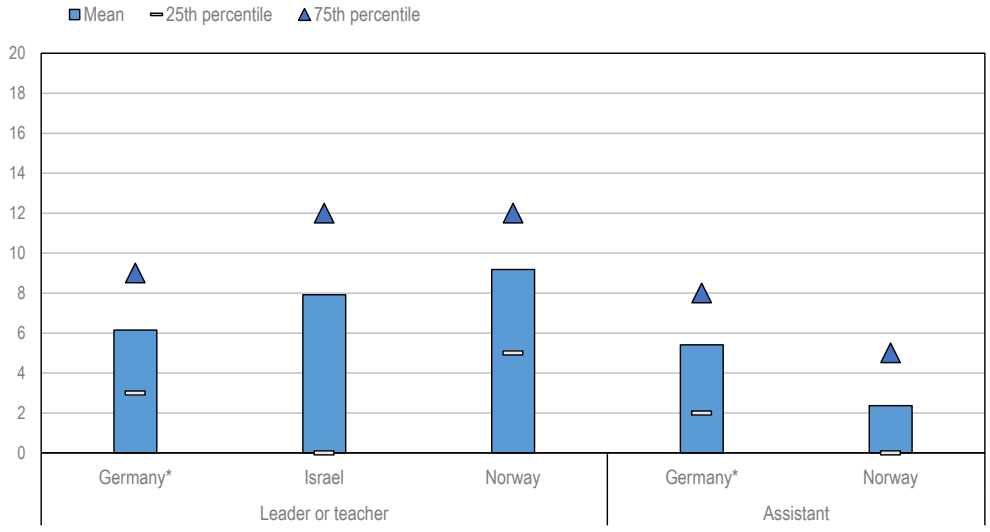
Differences across and within countries in the working time spent without children can also account for differences between assistants' and teachers' assignments (Figure 3.11). Assistants and teachers in Germany in centre-based settings have very similar patterns of time spent without children, with assistants spending slightly less time without children. Within each staff category, the variation remains equivalently large, showing that administrative/relational duties are shared by teachers and assistants. However, such a balance cannot be not found in Norway (or Denmark, with low response rates). Teachers spend on average nine hours per week on tasks without children and assistants only spend two, which suggests different roles and responsibilities across these two categories.

Figure 3.11. Staff role and number of hours per week not spent with children

Average number of hours per week not spent with children, according to staff, by type of staff



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: In Israel, the distinction between assistant and teacher does not apply.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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Resource needs

Countries differ in terms of the number of staff and children at the centre level (Figure 3.7). To assess whether these differences have implications for the quality of the education and care provided, this information can be combined with answers from leaders on issues they have identified as having an impact on the provision of a quality environment for children (Table 3.1). At the centre level, the number of staff per child is similar in Germany and Israel. In both countries, close to half of the centre leaders report they have a shortage of staff compared to the number of enrolled children (in Denmark, with low response rates, as well). The number of staff per child at the centre level is more favourable in Norway, where leaders rarely report that a shortage of staff is “quite a bit” or “a lot” of a barrier to providing a quality environment (14%). Israel stands apart from Germany insofar as leaders are also more likely to report a shortage of qualified staff (54% versus 31%). In Israel, the high proportion of leaders who report both shortages suggests that the shortage of the number of staff per child is driven by a shortage of qualified staff.

Leaders also report shortages of specific types of staff: those with competence in working with children from socio-economically disadvantaged homes, speaking another language or with special needs. These figures are best understood in combination with Figure 3.6, which presents the proportion of centres in which the proportion of such children exceeds 10%. In Norway, few leaders report a shortage of staff with these specific competences. Still, the large proportion of centres with more than 10% of children speaking another language at home raises needs that are not all met, given that 17% of leaders report lacking staff with competence in working with such children. In Germany, about one leader in four reports a shortage of staff in all three categories. In Israel, 38% of leaders report a shortage of staff with competence in working with children with special needs. The reported shortage of this competence combined with the small proportion of children with special needs enrolled in centres could suggest that leaders consider that some children have special needs but have not been identified as such.

Table 3.1. Resource shortages in early childhood education and care centres according to leaders

Proportion of leaders who report that the following issues hinder the centre's capacity to provide a quality environment for children quite a bit or a lot

		Germany*	Israel	Norway	Denmark**
Shortage of staff					
	Qualified staff	31%	54%	5%	15%
	Staff for the number of enrolled children	49%	46%	14%	62%
	Staff with competence in working with children speaking another language	29%	12%	17%	23%
	Staff with competence in working with children from socio-economically disadvantaged homes	25%	29%	5%	13%
	Staff with competence in working with children with special needs	27%	38%	8%	17%
Shortage or inadequacy of space					
	Indoor space	25%	28%	8%	22%
	Outdoor space	13%	21%	2%	7%
Shortage or inadequacies of material resources					
	Play or learning materials	4%	20%	1%	11%
	Digital technology for play and learning	32%	14%	7%	22%
	Insufficient internet access	32%	11%	11%	16%

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may results in biases in the estimates reported and limit the comparability of the data.
Notes: Colours vary from dark blue (0%) to white (50%) to dark grey (100%).
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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In contrast to centre leaders in Norway, leaders in Germany and Israel report a shortage of material resources or space. Leaders in Israel are the only ones to highlight a shortage of play or learning materials (20%), while respectively 30% and 31% of German leaders report insufficient Internet access and inadequacy of digital technology for play and learning, respectively. One in four leaders in Germany and Israel report inadequate indoor space.

Insights from leader reports on centre shortages are complemented by staff accounts on the importance of different spending priorities for the sector as a whole (Table 3.2). The spending priorities proposed to staff include items similar to those presented to leaders (see Table 3.1). However, comparisons should be made with caution, as leaders report on shortages in their centres while staff report on spending priorities for the ECEC sector as a whole. In addition, a current shortage of resources is different from a priority for future budgets. For instance, staff can consider that priorities exist while leaders do not necessarily have shortages, which can explain why the frequency of "high importance" priorities among staff appear higher.

There is no systematic agreement between staff's spending priorities and leaders' reports of shortages, especially in Norway. In all countries, more than three staff out of four agree that reducing group sizes by recruiting more staff is of high importance for the sector as a whole, including in Norway, where few leaders report a shortage of staff. Staff in Norway also prioritise spending to support children with special needs (66%), although leaders did not report any shortage of staff with competence in this area. Staff in Israel agree with leaders on this point, highlighting that this as an area to prioritise funding and potentially address staff shortages. Staff in Israel are the only ones reporting frequently (71%) that investment in toys, learning materials and outdoor facilities are of highly important spending priorities, underscoring the shortage of outdoor space or toys and learning materials reported by leaders.

The list of spending priorities that were proposed to staff also includes items without parallel items in leader reports, including improving salaries and offering high-quality professional development, which are most frequently reported as being of high importance. Improving salaries is rated as of high importance by almost

all staff in Israel (94%), three-fourths of staff in Germany, and half of staff in Norway (and in Denmark, with low response rates). Offering high-quality professional development is most often rated as an important spending priority in Israel (79%) and Norway (56%).

Table 3.2. Budget priorities in early childhood education and care centres according to staff

Proportion of staff reporting that the following spending priorities are of high importance for the sector as a whole

	Germany*	Israel	Norway	Denmark**
Reducing group sizes by recruiting more staff	78%	84%	74%	83%
Improving salaries	73%	94%	49%	43%
Supporting children with special needs	49%	76%	66%	64%
Offering high-quality professional development	47%	79%	56%	52%
Reducing staff administration load by recruiting more support staff	44%	74%	26%	24%
Investing in toys, learning materials and outdoor facilities	40%	71%	22%	22%
Supporting children from disadvantaged or migrant backgrounds	30%	61%	28%	39%
Improving centre buildings and facilities	44%	64%	17%	16%

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in biases in the estimates reported and limit the comparability of the data.
Note: Colours vary from dark blue (0%) to white (50%) to dark grey (100%).
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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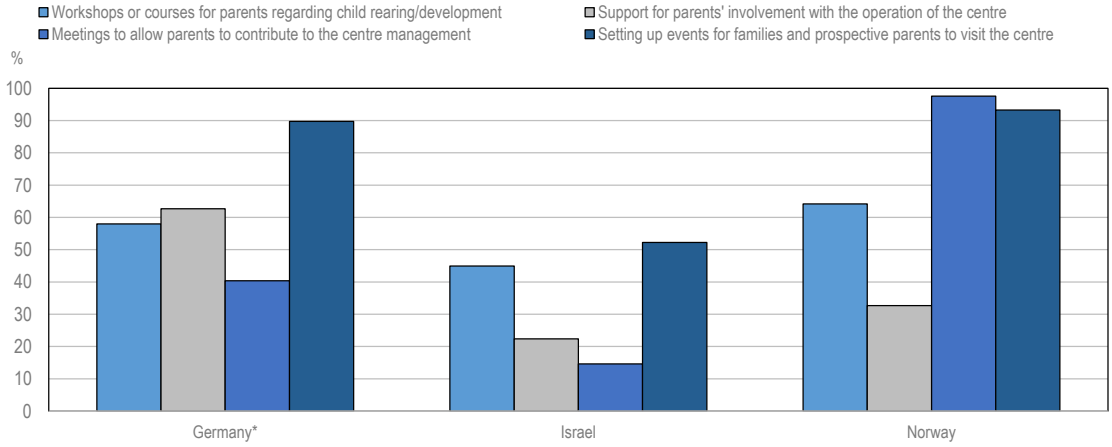
Activities to engage with parents

Beyond human and material resources, the type of activities involving parents also matter for a child's development. Although strong parent-teacher and parent-assistant partnerships and communication are important for children of all ages, they are particularly relevant for children under age 3. Research underlines that close partnerships allow parents and educators to share information about the child, promoting continuity between home and early childhood education, parents' confidence in their childcare arrangement, as well as the quality of care (Coelho et al., 2019[2]; Leavitt, 1995[3]; Owen et al., 2008[4]). Activities proposed to parents can foster and extend relationships between parents and staff.

Leaders participating in TALIS Starting Strong report on the provision of three types of activities to involve parents in the centre's activities over the last 12 months: 1) workshops or courses for parents; 2) parental participation in the centre's operations (e.g. fundraising, cleaning); and 3) parental participation in the centre's management decisions (Figure 3.12). All of these activities can contribute in their own ways to create continuity in the education and care environments between children's ECEC settings and homes. A majority of centres set up workshops or courses regarding child rearing or child development in Germany and Norway (58% and 63% respectively), less so in Israel (44%). The opportunities for parent involvement with the centre's operations is more country-specific. In Germany, 62% of leaders report this type of parental involvement. It is much less frequent in Norway (32%) and Israel (21%). Involving parents in the centre's management decisions also varies greatly across countries, from Norway where nine out of ten leaders report this kind of parental involvement, to Israel, where only 14% of leaders report these opportunities for parents.

Figure 3.12. Activities provided by the early childhood education and care centre to parents or guardians

Percentage of centre leaders reporting they provided the following to parents or guardians during the 12 months prior to the survey



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147593

Age composition of the target group in early childhood education and care centres

Integrated centres in Germany and Norway serve children from age 1 to age 5, and occasionally children who are somewhat younger and somewhat older. In such centres, only staff who worked regularly with children under age 3 were sampled. In Israel, although centres are not integrated, centres serving children under age 3 also serve children age 3. TALIS Starting Strong includes questions on the target group, which is the first group of children that staff worked with on their last working day before the day of the survey. The age composition of the target group can have an important impact on staff practices and children's experiences. Staff must adapt their practices to the age diversity of the children. Three different types of target groups are possible: 1) target groups with few or no children under age 3; 2) target groups with few or no children over age 3; and 3) target groups with a mix of all ages.

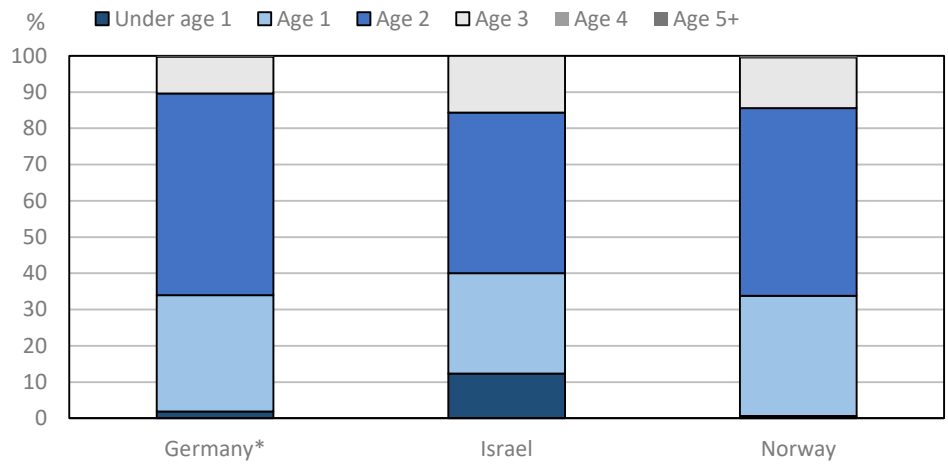
In Norway, 69% of staff surveyed report working with a target group composed of a majority of children under age 3 (this proportion is higher in Denmark, with low response rates). In Germany, where there is often a smaller proportion of children under age 3 in the centre, a majority of surveyed staff (55%) also report working with a target group composed of a majority of children under age 3. In Israel, 79% of staff report working with a target composed of a majority of children under the age of 3. These target groups have a small minority of children who are age 3 and children older than 3 are practically absent in both of these groups (Figure 3.13 A). This means that target groups with a majority of children under age 3 are actually not mixing age groups at all and serve only younger children. In these target groups, about one-third of children are age 1 and the majority of children are age 2 (Box 3.1).

The picture is different for target groups with a minority of children under age 3 (Figure 3.13 B). In both countries, only one child out of five in these groups is under age 3, with more children who are age 2 than who are age 1. In Germany, these target groups also serve, on average, a comparable number of children ages 3, 4 or 5, while in Norway children age 3 account for 42% of all children. As these are average proportions, several types of target groups can be present in this category, in particular, target groups

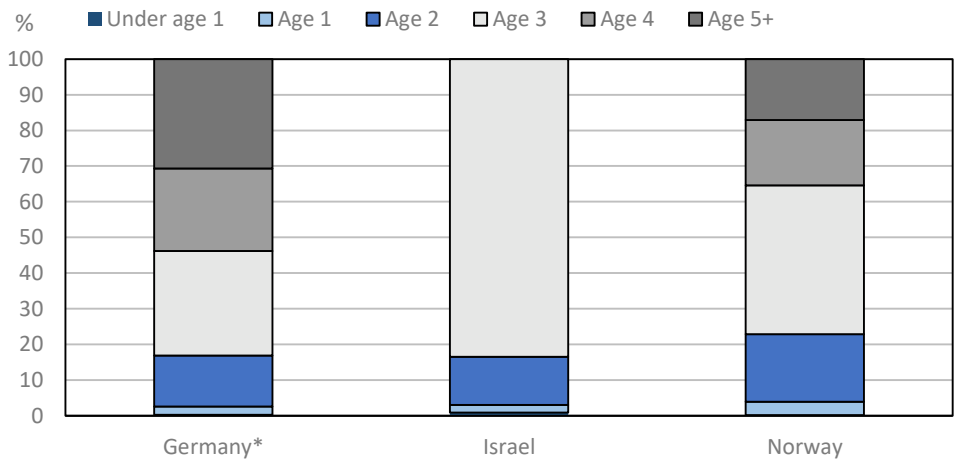
mixing all ages and target groups mixing children under age 3 with children who are age 3. The observed averages suggest that this latter type is more frequent in Norway than in Germany.

Figure 3.13. Age composition of the target group according to the proportion of children under age 3

A. Age composition of target groups with a majority of children under age 3



B. Age composition of target groups with a minority of children under age 3



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147612

Box 3.1. Infants in early childhood education and care settings

Infants have highly specific developmental needs and rely heavily on their caregivers to provide physical and verbal support, including through caregiving routines. Staff must be aware of and sensitive to infants' needs and interests in their interactions (Jamison et al., 2014[5]; Chazan-Cohen et al., 2017[6]).

In Israel, the enrolment of very young children in early childhood education and care (ECEC) settings is high compared to other OECD countries (see Chapter 2). The enrolment rate in ECEC for children under age 1 is 31% in Israel, compared to 6% in Germany and 4% in Norway. Across OECD countries, only in Luxembourg has a rate similar to Israel (OECD, 2019[7]). The low share of infants enrolled in ECEC across OECD countries could be partially explained by parental leave policies. For example, in Norway, parental leave is granted for a one-year duration (OECD, 2019[8]).

There is also a high proportion of very young children in target groups (defined as the first group of children that staff worked with on their last working day before the day of the survey) in settings in Israel participating in TALIS Starting Strong. Children under age 1 comprise 12% of target groups, on average, in Israel, compared to 2% in Germany and nearly 0% in Norway. Regulations for ECEC settings in Israel group classrooms/playrooms according to three age ranges: babies, from 6 months to 15 months; young toddlers, from 16 months to 24 months; and toddlers, from 25 months to 36 months. These different age subgroups also have implications for regulations, for example with different staff-child ratios, as well as for staff practices in the groups and overall process quality.

Staff with specialised training in working with infants are critical to high process quality in ECEC. However, although infant education and care demand specific knowledge of infant development to support children's exploration and communication, the literature suggests that staff training is usually more focused on older children. Staff and infants spend a large amount of time involved in care routines, and the literature suggests that these moments are privileged opportunities to develop respectful, reciprocal and responsive interactions. Staff should also be prepared to support group and peer processes and collaborative play, as peer social interactions involving reciprocity, joint attention and mutual affect are foundational for infants' social development (Williams, Mastergeorge and Ontai, 2010[9]).

Staff's characteristics

TALIS Starting Strong gives a picture of the characteristics of the ECEC workforce, including age, experience and educational attainment. This picture helps policy makers understand the strengths and weaknesses of the current ECEC workforce and what needs can be addressed through policy. It also helps plan for recruitment. For Denmark, Germany and Norway, this section distinguishes between staff working with target groups comprising a majority or a minority of children under age 3, as these countries have many integrated centres with children ranging from the age of one to five. As such, it is not possible to clearly separate staff working with children under age 3 from those also working with older children. In Israel, ECEC settings are not age-integrated and therefore only staff working with children under age 3 are described here.

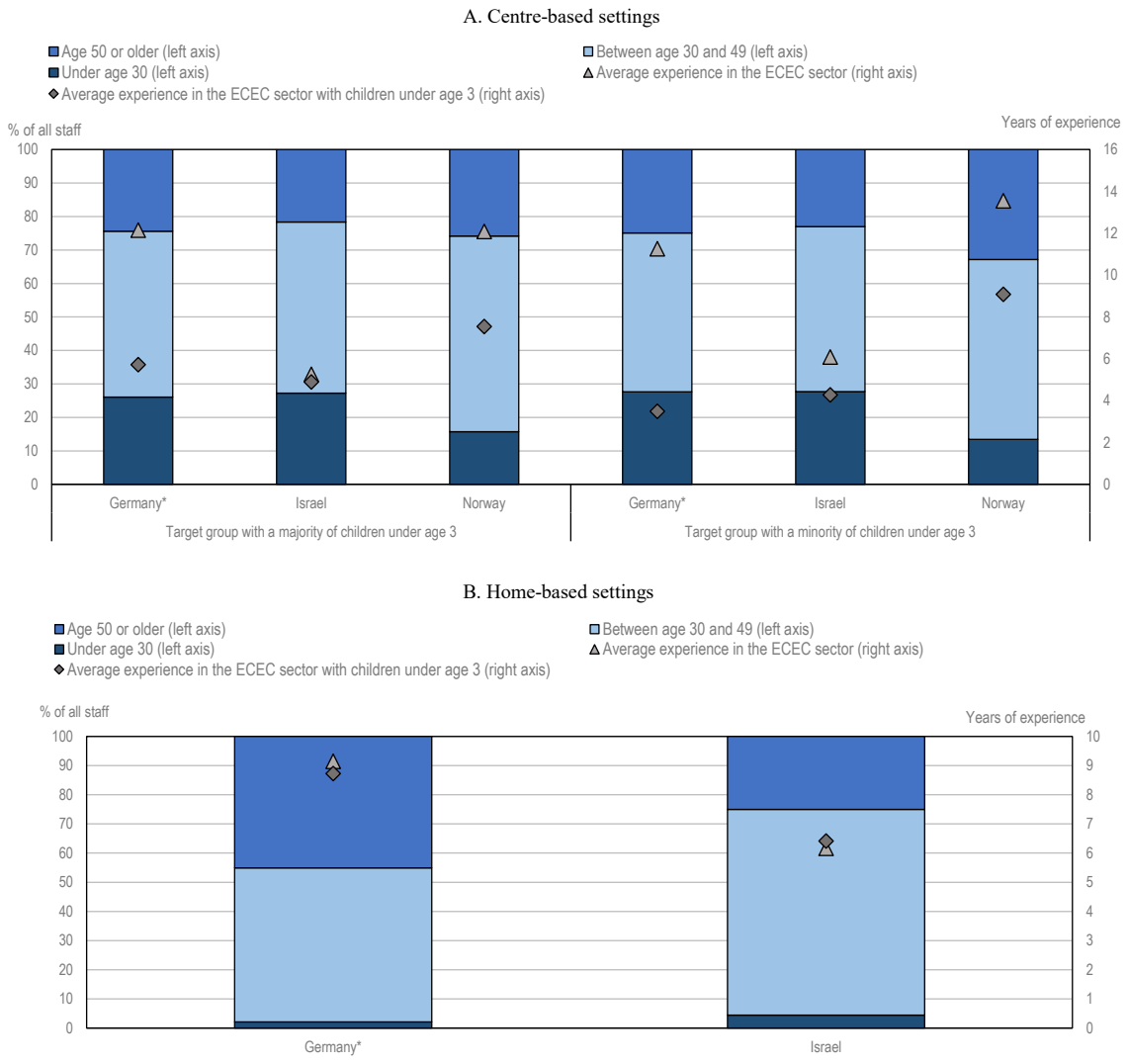
Staff's age and experience

The age profile of the workforce in ECEC centre-based settings is similar across countries and target group age, with generally 25% of the workforce under the age of 30, 50% between the age of 25 and 49, and 25% over the age of 50 (see Figure 3.14). Centre-based settings in Norway have a somewhat older workforce (as in Denmark), with less than 15% of staff under the age of 30.

While in Germany and Norway the average number of years of experience of staff working in the ECEC sector is more than ten regardless of the age of the target group, ECEC staff in Israel are less experienced and report having worked, on average, five years in the sector (see Figure 3.14). Importantly, staff in Germany and Norway report a much fewer number of years of specific experience with children under 3 compared to their overall experience in the sector, than staff in Israel. Staff in Germany have, on average, six years of experience working with children under age 3 if they work with a target group comprising a majority of this age group. In contrast, staff have about four years of this specialised experience if they work with a target group comprising a minority of children under age 3. The gap is smaller in Norway, where average staff experience with children under age 3 is eight or nine years, depending on the age of the target group.

In all countries, data on staff's experience reflects the recent history and growth of ECEC services for children under age 3. These ECEC services have seen considerable growth in the past ten years (see Chapter 2) that entailed important waves of recruitment, with new staff progressively gaining experience. Integrated settings offer more flexibility insofar as staff working with children from ages 3-5 can start working also with younger children, which is mirrored by the fact that staff have more experience working with children than specifically working with very young children.

Figure 3.14. Age and experience of staff in early childhood education and care settings



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Notes: Home-based settings serve a small number of children in Norway and were not included in the survey. In Israel, all staff working in centre-based settings work with target groups including only children under age 3.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147631

Staff's age and average experience in German and Israeli home-based settings are different from those observed in centre-based settings. The proportion of staff under age 30 is quite small (2% in Germany and 4% in Israel) in home-based settings, and in Germany, 45% of these staff are older than 50. Home-based staff in Germany have, on average, nine years of experience, with nearly all of this experience including children under age 3. In Israel, the average number of years of experience (six years) is higher than what is observed in centre-based settings.

Staff's educational attainment

Along with experience and in-service training, pre-service training is one of the main roads through which staff acquire the skills and knowledge to create high-quality environments for children's development and well-being. All countries have educational prerequisites to enter the ECEC profession. These requirements can vary according to roles and responsibilities and may have evolved in the past years. In addition, pathways outside of formal education exist to facilitate career growth. An extensive literature shows that higher levels of educational attainment are associated with higher quality staff-child interactions (OECD, 2018[10]). More specifically, in a number of countries, including Norway, Portugal and the United States (Castle et al., 2016[11]), studies confirm the association between staff studies beyond secondary school and better interactions between these staff and children under age 3, in particular to foster language development.

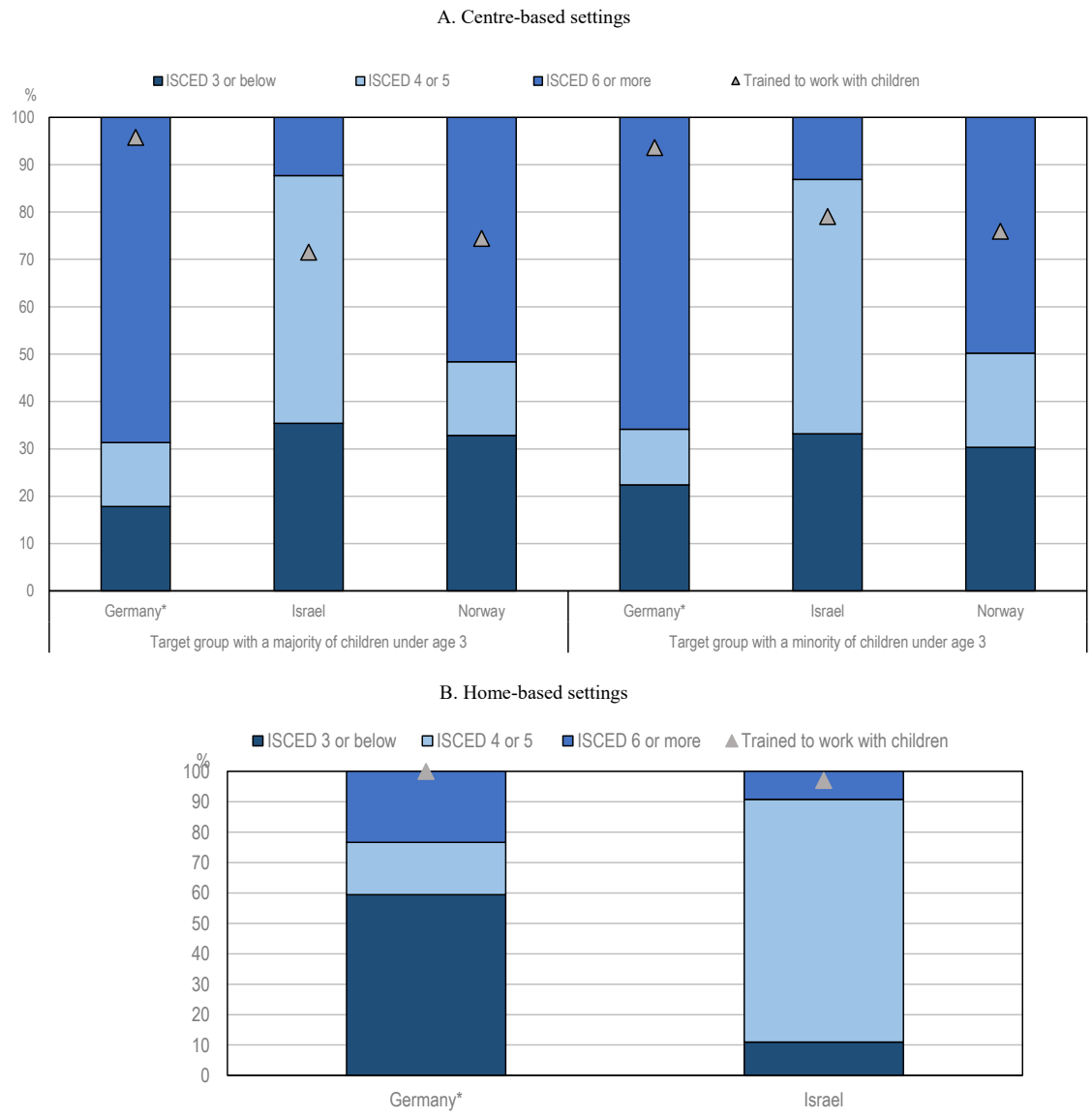
In all countries, most staff have pursued education and training after secondary school (ISCED 4 and above) (Figure 3.15), with the highest percentage found in Germany. Education levels are similar for staff regardless of whether their target group includes a minority or a majority of children under age 3. Among staff who report that their target group includes a majority of children under age 3, the proportion of staff in Germany with an educational attainment at ISCED 3 level or below (17%) is much lower than it is in Israel and Norway (35% and 32%, respectively).

In Germany and Norway, more than half of all staff working in target groups with a majority of children under age 3 have at least a bachelor's degree or equivalent (ISCED 6 or more), with a lower proportion in Norway (52%) than in Germany (67%). To the contrary, in Israel, the main post-secondary pathway to the ECEC profession is a degree equivalent to ISCED 4 or 5 (52% of all staff).

In all countries, a majority of staff report that their initial training included specific instruction to work with children, but only in Germany did nearly all staff receive such training (97% of staff in target groups with a majority of young children, 95% in target groups including only a minority of young children). In Israel and Norway, 70-75% of staff report that their initial training included such elements. In Denmark (with low response rates), the proportion is even lower, but remains above 50%. This means that most staff who did not pursue studies after secondary school still had elements covering work with children in their curriculum. Those who did not report training specifically to work with children are more likely to have stopped their initial training without a degree beyond secondary school. A greater proportion of staff in Norway (68%) than in Israel (66%) who did not report that their initial training covered working with children did not pursue studies beyond secondary school.

Staff's educational attainment in German home-based settings is lower than it is in centre-based settings, whereas the educational attainment of these groups tends to be similar in Israel. In Germany, almost 60% of staff working in home-based settings have not pursued an education beyond secondary school. In Israel, to the contrary, 80% of home-based staff have reached ISCED 4 or 5. In both countries, almost all staff in home-based settings received training to work with children.

Figure 3.15. Educational attainment of staff working in early childhood education and care settings



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Notes: Home-based settings serve a small number of children in Norway and were not included in the survey.. In Israel, all staff working in centre-based settings work with a target group including only children under age 3.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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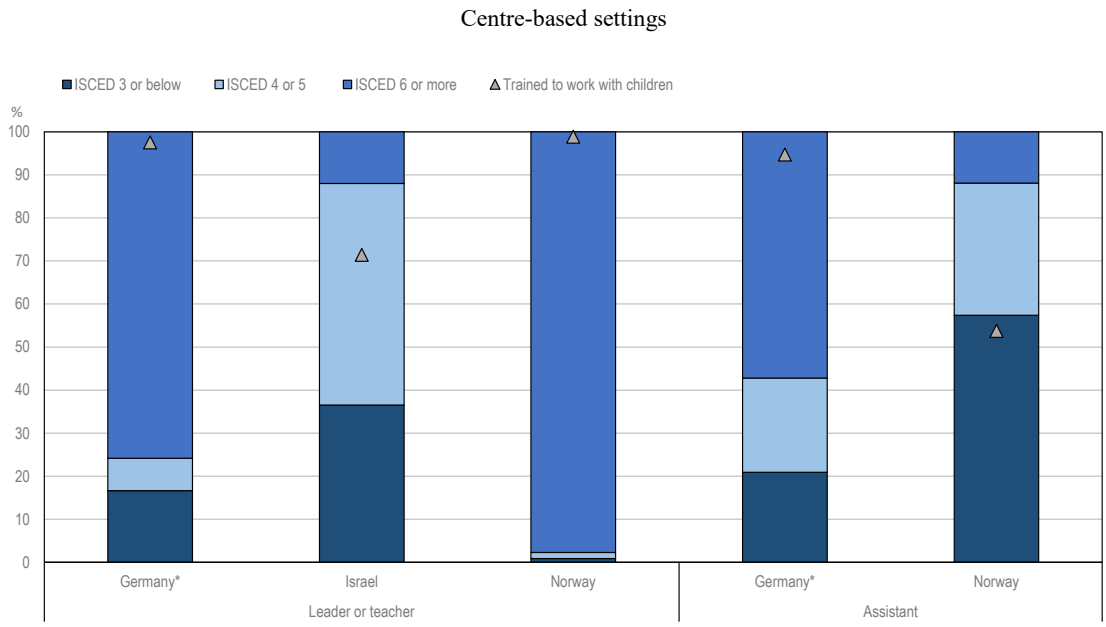
In centre-base settings, teachers generally have a higher educational attainment than assistants, in particular in Norway (Figure 3.16). In Germany, 75% of teachers have at least a bachelor's degree or equivalent (ISCED 6 or more), compared to 57% of assistants. In both roles, the proportion of staff without a post-secondary degree is similar (17% and 21% respectively). In Norway, assistants' and teachers' roles are more different (Figure 3.11), and so is their educational attainment. Almost all teachers in Norway have a bachelor's degree or equivalent (more than 97%), while 58% of assistants have not pursued studies beyond secondary school. Importantly, almost all teachers in both Germany and Norway had training related to working with children as part of their initial training.

Figure 3.16. Educational attainment and role of staff working in early childhood education and care settings



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: In Israel, the distinction between assistant and teacher does not apply.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147669

Content of pre-service training for early childhood education and care

Staff who report their formal education included training specifically to work with children were also asked about the content of this training, and generally reported a very diverse and comprehensive set of topics covered (Table 3.3). In all three countries, a selection of core topics is reported by more than 80% of those staff: child development, facilitating play, facilitating creativity and problem solving, learning theories, and child health and personal care. Training topic coverage is the broadest in Norway (and Denmark, with low response rates). The topic coverage in Germany differs only with respect to a few topics (working with children with special needs or with second-language learners, facilitating learning in mathematics), in which fewer staff report having training. In Germany and Norway, target group age is almost not related to the training content.

In Israel, the topic coverage is more limited, in particular in terms of learning areas, and much fewer staff report training that included facilitating learning in arts (46%), in science and technology (22%), or in mathematics/numeracy (31%). Importantly, 62% of staff report that transitions from ISCED 01 to ISCED 02 were covered in their initial training, on par with Norway. A relatively large percentage of staff is trained in group management.

In home-based settings, where almost all staff report they have training to work with children, topic coverage is similar to that reported by staff in centre-based settings. In Germany, with a small sample of home-based staff, the coverage is to some extent narrower, with fewer staff reporting training in topics such as learning theories, for instance. In Israel, topic coverage as part of pre-service training for staff working in home-based settings is similar to that of staff working in centre-based settings.

Table 3.3. Pre-service training content for staff in early childhood education and care

A. Centre-based settings: Proportion of staff reporting the following elements were included in their pre-service training

	Target group age							
	Majority of children under age 3				Minority of children under age 3			
	Germany*	Israel	Norway	Denmark**	Germany*	Israel	Norway	Denmark**
Content related to child development	99%	97%	99%	97%	99%	96%	100%	91%
Facilitating play	94%	94%	91%	95%	94%	89%	94%	95%
Facilitating creativity and problem solving	93%	92%	90%	88%	91%	92%	90%	92%
Learning theories (e.g. socio-cultural, behavioral, cognitive, constructivist)	86%	87%	86%	89%	85%	86%	91%	79%
Content related to child health or personal care (e.g. hygiene)	91%	89%	84%	81%	88%	79%	89%	85%
Monitoring/documenting child development, well-being and learning	87%	76%	87%	87%	83%	67%	91%	85%
Facilitating learning in literacy and oral language	84%	66%	89%	79%	84%	72%	91%	96%
Working with parents or guardians/families	87%	61%	85%	80%	87%	54%	91%	82%
Facilitating learning in arts	91%	46%	86%	85%	89%	52%	89%	81%
Classroom/playgroup/group management	65%	72%	63%	77%	63%	62%	68%	74%
Facilitating learning in science and technology	67%	22%	85%	74%	65%	23%	91%	80%
Working with children from diverse backgrounds	60%	45%	69%	66%	63%	50%	74%	60%
Facilitating children's transition from ISCED 01 to ISCED 02	46%	62%	51%	55%	38%	60%	66%	55%
Facilitating learning in mathematics/numeracy	59%	31%	80%	43%	58%	41%	81%	34%
Working with children with special needs	44%	30%	60%	78%	46%	25%	63%	74%
Working with dual/second language learners	42%	26%	61%	59%	44%	23%	64%	46%

B. Home-based settings: Proportion of staff reporting the following elements were included in their pre-service training

	Germany*	Israel	Denmark**
Content related to child development		100%	
Facilitating play		99%	
Facilitating creativity and problem solving		98%	
Learning theories (e.g. socio-cultural, behavioural, cognitive, constructivist)		86%	
Content related to child health or personal care (e.g. hygiene)		96%	
Monitoring/documenting child development, well-being and learning		88%	
Facilitating learning in literacy and oral language		74%	
Working with parents or guardians/families		83%	
Facilitating learning in arts		52%	
Classroom/playgroup/group management		75%	
Facilitating learning in science and technology		24%	
Working with children from diverse backgrounds		60%	
Facilitating children's transition from ISCED 01 to ISCED 02		74%	
Facilitating learning in mathematics/numeracy		31%	
Working with children with special needs		38%	
Working with dual/second language learners		16%	

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in biases in the estimates reported and limit the comparability of the data.
Notes: Colours vary from dark grey (0%) to white (50%) to dark blue (100%). Home-based settings serve a small number of children in Norway and were not included in the survey. Due to the limited sample sizes, which resulted in large standard errors, only colours (no percentages) are displayed for staff working in home-based settings in Denmark and Germany. Only staff who reported that their pre-service training included training to work specifically with children answered these questions. All elements are sorted according to the average proportion across all countries in centre-based settings. In Israel, all staff working in centre-based settings work with a target group including only children under age 3.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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Professional development needs

TALIS Starting Strong includes a detailed module about professional development, with information on the topics that are covered as well as a self-assessment of professional development needs (Table 3.4). In service training serves several purposes. It can help staff update their knowledge and practices. It also provides the opportunity for staff to adapt their work to new technologies and new practices. Staff can also benefit from in-service training to overcome specific difficulties they encounter in the course of their work. Even though staff self-reports of these needs must be interpreted with caution, they can help policy makers better design professional development offers for ECEC services. First, reported needs in a specific topic are a means to assess the importance of the topic, but can also signal staff-specific interest. Second, staff's reported needs are not necessarily in line with children's needs. Third, in comparing countries, cultural differences can exist, driving the threshold beyond which a need can be considered important. In particular, the more staff are aware of the best current practices, the more likely they are to report a need.

In centre-based settings across all four countries, the areas of professional development need reported by large and small percentages of staff are generally the same. The most frequently reported needs are still not a consensus, even though the majority of staff across countries report them. In all countries, about 60% of staff reported they have at least a moderate need for professional development covering child development. Professional development linked to working with children with special educational needs is also one of the most frequently reported needs, especially in Norway. This is in line with the shortage of staff with competence in this area reported by leaders (see Table 3.1). Facilitating learning in literacy and oral language, and in creativity and problem solving are among the most frequently mentioned learning areas with needs for ongoing training. On the other hand, facilitating learning in science and technology, and in mathematics and numeracy are among the least frequently mentioned (along with child health and personal care).

Training needs reported by staff also point to some country specificities. A larger percentage of staff in Norway report that they need professional development in how to work with dual language learners or children from diverse backgrounds than in the other countries. Since staff also report high training needs to work with children with special needs, these results could point to a greater awareness of the need to address diversity. Germany is the only country in which professional development to improve work with parents and guardians is among the most reported needs (57%).

In home-based settings, a smaller percentage of staff in Israel generally report moderate or important needs, while in Germany, reports are similar to those in centre-based settings.

Table 3.4. Professional development needs of staff working in early childhood education and care

A. Centre-based settings: Proportion of staff reporting a moderate or high level of need of professional development in the following areas

	Target group age							
	Majority of children under age 3				Minority of children under age 3			
	Germany*	Israel	Norway	Denmark**	Germany*	Israel	Norway	Denmark**
Content related to child development	59%	64%	61%	50%	55%	65%	56%	64%
Working with children with special needs	55%	51%	70%	49%	56%	55%	68%	66%
Facilitating creativity and problem solving	54%	57%	62%	38%	56%	65%	56%	41%
Facilitating learning in literacy and oral language	47%	49%	65%	41%	43%	55%	59%	58%
Working with dual/second language learners	49%	41%	64%	46%	51%	47%	64%	47%
Monitoring/documenting child development, well-being and learning	53%	52%	55%	33%	48%	56%	54%	57%
Learning theories	41%	49%	50%	43%	43%	54%	42%	41%
Working with parents or guardians/families	57%	44%	39%	41%	55%	57%	29%	41%
Working with children from diverse backgrounds	42%	40%	62%	34%	44%	44%	61%	41%
Facilitating learning in arts	38%	45%	48%	39%	33%	46%	46%	54%
Facilitating play	39%	49%	43%	32%	41%	53%	36%	55%
Classroom/playgroup/group management	40%	48%	46%	26%	41%	45%	41%	42%
Facilitating children's transition from ISCED 01 to ISCED 02	41%	43%	48%	24%	30%	42%	35%	34%
Facilitating learning in science and technology	36%	32%	47%	27%	44%	37%	45%	36%
Facilitating learning in mathematics/numeracy	33%	32%	44%	30%	37%	36%	48%	42%
Content related to child health or personal care (e.g. hygiene)	23%	40%	25%	13%	22%	38%	26%	13%

B. Home-based settings: Proportion of staff reporting a moderate or high level of need of professional development in the following areas

	Germany*	Israel	Denmark**
Content related to child development		37%	
Working with children with special needs		36%	
Facilitating creativity and problem solving		37%	
Facilitating learning in literacy and oral language		38%	
Working with dual/second language learners		16%	
Monitoring/documenting child development, well-being and learning		27%	
Learning theories		29%	
Working with parents or guardians/families		26%	
Working with children from diverse backgrounds		16%	
Facilitating learning in arts		39%	
Facilitating play		37%	
Classroom/playgroup/group management		22%	
Facilitating children's transition from ISCED 01 to ISCED 02		24%	
Facilitating learning in science and technology		28%	
Facilitating learning in mathematics/numeracy		24%	
Content related to child health or personal care (e.g. hygiene)		19%	

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in biases in the estimates reported and limit the comparability of the data.
Notes: Colours vary from dark blue (0%) to white (50%) to dark grey (100%). Home-based settings serve a small number of children in Norway and were not included in the survey. Due to the limited sample sizes, which resulted in large standard errors, only colours (no percentages) are displayed for staff working in home-based settings in Denmark and Germany. Only staff who reported that their pre-service training included training to work specifically with children answered these questions. All elements are sorted according to the average proportion across all countries in centre-based settings. In Israel, all staff working in centre-based settings work with a target group including only children under age 3.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147745

Staff well-being

Staff well-being is important to attract and retain talents, but it can also impact the quality of the environment provided to young children in a number of ways. Low staff well-being can directly affect the

quality of the work provided, by decreasing motivation, increasing absenteeism or limiting the quality of the staff's interactions with children and parents (OECD, 2018[10]). Dissatisfied staff are less likely to stay in the profession, putting extra pressure on recruitment and damaging workforce stability. TALIS Starting Strong gives two complementary sets of information on staff well-being. Staff reports on job satisfaction present a broad view of their satisfaction with several aspects of their job, while staff reported sources of stress help to understand how the different tasks they have to perform impact their mental well-being in their daily life at work.

In all countries, staff overwhelmingly agree or strongly agree that "all in all they are satisfied with their job", a statement that is, however, diminished by two sources of dissatisfaction: salaries and, to a lesser extent, the way the society as a whole values them (Table 3.5). In all countries (including Denmark, with low response rates), more than 94% of staff report they are all in all satisfied with their job. There is a similar consensus for the following items: they agree parents or guardians value them, that their centre is a good place to work, and they would still choose to work as an ECEC staff if they had to choose again. However, only about 30% of staff agree they are satisfied with their salaries in Germany and Norway, and an even lower proportion in Israel (16%), where they also are less satisfied with the terms of their contracts. While a majority of staff feel valued by society in Israel and Norway, less do in Germany (37%). Reports are similar from staff in German home-based settings. Compared with centre-based staff, home-based staff in Israel differ on two important points: home-based staff agree more often that they are satisfied with their salary, and likewise, that they are valued by society. This suggests a link between being satisfied with one's salary and how staff perceive being valued by society.

Table 3.5. Job satisfaction in early childhood education and care settings

Proportion of respondents who report agreeing or strongly agreeing with the following statements concerning their job satisfaction, by type of setting

	Centre-based settings				Home-based settings		
	Germany*	Israel	Norway	Denmark**	Germany*	Israel	Denmark**
Staff are valued in society	37%	56%	58%	55%		84%	
Satisfied with the salary I receive for my work	29%	16%	30%	32%		47%	
Apart from my salary, I am satisfied with the terms of my contract	81%	57%	74%	82%		28%	
Enjoy working at this ECEC centre	96%	98%	97%	98%		100%	
Satisfied with the support received from parents or guardians	81%	91%	97%	91%		93%	
I need more support from my leader	26%	48%	32%	27%		47%	
If I could choose again, I would still choose to work as an ECEC staff	85%	79%	89%	83%		91%	
I would recommend this centre as a good place to work	89%	92%	94%	94%		90%	
Parents or guardians value me as an ECEC staff	97%	97%	99%	99%		100%	
All in all, I am satisfied with my job	94%	96%	97%	95%		100%	

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in biases in the estimates reported and limit the comparability of the data.
Notes: Colours vary from dark grey (0%) to white (50%) to dark blue (100%). Home-based settings serve a small number of children in Norway and were not included in the survey. Due to the limited sample sizes, which resulted in large standard errors, only colours (no percentages) are displayed for staff working in home-based settings in Denmark and Germany. All elements are sorted according to the average proportion across all countries in centre-based settings.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147764

The sources of stress that staff in centres report vary generally across countries, with staff in Germany reporting a greater number of sources of stress (Table 3.6). For nearly a majority of staff in all countries, a lack of resources is perceived as a source of stress, despite the differences in resource availability presented above. However, in Israel, where resources are generally scarcer, all other sources of stress are reported less often than in the other countries. Having too many additional duties and managing classroom/playroom behaviour are frequently mentioned as sources of stress in Israel. The most frequently reported sources of stress in Germany are having extra duties due to absent staff, along with having too much work related to documenting children's development – which is rarely reported as a source of stress in Israel and Norway. Having too many children in the classroom/playroom and having too many additional duties are also often reported as sources of stress in Germany (and in Denmark, with low response rates). In Norway, despite more staff in the centres, the most likely source of stress for staff is having too many children in the classroom/playroom. All other conditions are much less often reported as sources of stress.

Table 3.6. Sources of stress of staff working in early childhood education and care settings

Proportion of respondents who say that the following conditions are sources of stress "quite a bit" or "a lot," by type of setting

	Centre-based settings				Home-based settings		
	Germany*	Israel	Norway	Denmark**	Germany*	Israel	Denmark**
Lack of resources	53%	56%	48%	66%		32%	
Having too many children in my classroom/playroom	52%	40%	57%	65%		10%	
Having extra duties due to absent staff	68%	30%	50%	66%		8%	
Having too many additional duties	49%	46%	39%	44%		23%	
Having too much work related to documenting children's development	67%	18%	23%	50%		22%	
Managing classroom/playroom behaviour	33%	50%	23%	39%		41%	
Keeping up with changing requirements from authorities	38%	27%	30%	39%		38%	
Being held responsible for children's development well-being and learning	36%	40%	18%	32%		45%	
Having too much administrative work	42%	6%	26%	50%		12%	
Accommodating children with special needs	23%	20%	19%	40%		26%	
Addressing parents' or guardians' concerns	33%	33%	13%	21%		25%	
Having too much preparation work for children's activities	26%	19%	21%	32%		16%	

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in biases in the estimates reported and limit the comparability of the data.
Notes: Colours vary from dark blue (0%) to white (50%) to dark grey (100%). Home-based settings serve a small number of children in Norway and were not included in the survey. Due to the limited sample sizes, which resulted in large standard errors, only colours (no percentages) are displayed for staff working in home-based settings in Denmark and Germany. All elements are sorted according to the average proportion across all countries in centre-based settings.
Source: OECD (2019[1]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147783

Conclusion

This chapter discussed the main characteristics and structural features of ECEC settings that can support quality. Large differences exist across and within countries in the quality of the neighbourhood where ECEC centres are located, the characteristics of the children in ECEC settings (age mix, socio-economic and cultural background), and the size of centres. These factors shape the needs and challenges faced by ECEC settings to provide quality, but are difficult to affect through policies. Staff in the ECEC sector also differ greatly both across and within countries in terms of their education and training backgrounds and experience and therefore express various training needs. They also face different working conditions and sources of stress. Policies can foster quality by allocating resources to centres depending on their needs and by helping all staff work as professionals in good working environments. Attracting and maintaining a high-quality workforce is also an important challenge in at least three of the participating countries (Denmark, Germany and Israel). This chapter points to the following policy implications:

1. Ensure initial training and professional development opportunities for staff reflect the unique needs of children in this age group and of staff depending on their situation. Staff working in the ECEC sector have different profiles and roles, but all of them need to work as professionals with children and have the appropriate skills and knowledge. Investing in high-quality initial training programmes covering the main areas of working with children is important for the next generation of staff. In addition, all staff need to benefit from training opportunities to help them develop their skills during their careers. Policies can target more particularly staff with a low education and training background, as is the case in home-based settings in some countries. As staff differ in their needs and face barriers to participate in training linked to the profession itself (e.g. no replacement if they attend training), a multiplicity of training opportunities, both in terms of format and content, should be offered. Flexible forms of training, such as learning from peers and mentoring, as well as work-based learning may have multiple advantages for staff working with young children, as these forms of training can be adapted to staff's profiles and needs and to the barriers they face, such as lack of time or the cost of training.
2. Prepare staff to work with parents. Parents have a crucial impact on the development of very young children and ECEC settings can complement and help parents in their role. Staff in home-based settings have particularly close links with parents. Policies can strengthen the role of parents in curriculum frameworks and prepare staff through pre-service training and continuing professional development to build bridges between ECEC settings and children's homes.
3. Raise the status of the profession and address sources of stress. Staff are very committed to the profession and to their role and most of them consider that if they could decide again, they would still choose the same job. However, only half of staff feel valued by society and, related to this, staff show a low level of satisfaction with their salary. At the same time, many countries face important challenges to attract talents to the profession. Policies to ensure that education and training help staff grow as professionals can go hand in hand with salary increases to better align staff's skills, roles and responsibilities with their salary. This would help attract more candidates to the profession. In addition, the profession needs to be seen as providing well-being. Policies can work on alleviating some sources of stress, such as a lack of time to perform some tasks without children or too much administrative and documenting work.

References

Castle, S. et al. (2016), "Teacher-child interactions in early Head Start classrooms: Associations with teacher characteristics", *Early Education and Development*, Vol. 27/2, http://dx.doi.org/10.1080/10409289.2016.1102017. [11]

Chazan-Cohen, R. et al. (2017), *Working Toward a Definition of Infant/Toddler Curricula: Intentionally Furthering the Development of Individual Children within Responsive Relationships*, Office of Planning, Research and Evaluation, https://www.acf.hhs.gov/sites/default/files/opre/nitr_report_v09_final_b508.pdf (accessed on 8 December 2017). [6]

Coelho, V. et al. (2019), "Predictors of parent-teacher communication during infant transition to childcare in Portugal", *Early Child Development and Care*, Vol. 189/13, pp. 2126-2140, https://doi.org/10.1080/03004430.2018.1439940. [2]

Jamison, K. et al. (2014), "CLASS-Infant: An observational measure for assessing teacher-infant interactions in center-based child care", *Early Education and Development*, Vol. 25/4, pp. 553-572, http://dx.doi.org/10.1080/10409289.2013.822239. [5]

Leavitt, R. (1995), "Parent-provider communication in family day care homes", *Child and Youth Care Forum*, Vol. 24/4, pp. 231-245, https://doi.org/10.1007/BF02128590. [3]

OECD (2019), *Education at a Glance 2019: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/f8d7880d-en. [7]

OECD (2019), *Providing Quality Early Childhood Education and Care: Results from the Starting Strong Survey 2018*, TALIS, OECD Publishing, Paris, https://doi.org/10.1787/301005d1-en. [8]

OECD (2019), *TALIS Starting Strong 2018 Database*, OECD, Paris, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm. [1]

OECD (2018), *Engaging Young Children: Lessons from Research about Quality in Early Childhood Education and Care*, Starting Strong, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264085145-en. [10]

Owen, M. et al. (2008), "Relationship-focused child care practices: Quality of care and child outcomes for children in poverty", *Early Education and Development*, Vol. 19/2, pp. 302-329, https://doi.org/10.1080/10409280801964010. [4]

Williams, S., A. Mastergeorge and L. Ontai (2010), "Caregiver involvement in infant peer interactions: Scaffolding in a social context", *Early Childhood Research Quarterly*, Vol. 25/2, pp. 251-266, https://doi.org/10.1016/j.ecresq.2009.11.004. [9]

4 Process quality in early childhood education and care settings for children under age 3

This chapter explores process quality in settings serving children under age 3 using data from TALIS Starting Strong. Process quality describes how staff interact with young children and their parents and is a key aspect of a well-functioning early childhood education and care sector. This chapter investigates how much staff in Denmark, Germany, Israel and Norway engage in practices associated with different dimensions of process quality: cognitive development, socio-emotional development, engagement with parents, and group organisation and individual support. It also details how the composition of the group of children staff work with can vary across countries. The chapter concludes with an analysis of how process quality relates to different characteristics of the staff and centre.

Key messages

- TALIS Starting Strong measures process quality through staff reports about their own practices and practices used more generally in their early childhood education and care (ECEC) settings. Process quality describes how staff, children and parents interact with each other, and helps to understand how ECEC settings create an environment that fosters children's learning and well-being. According to the literature, higher process quality is associated with better cognitive and socio-emotional development of children under age 3.
- Across all dimensions of process quality, staff in Israel tend to favour the most positive response option ("a lot" or "almost always") compared with their colleagues in Denmark (with low response rates), Germany and Norway. However, the proportion of staff endorsing the two most negative response options is similar across countries. Staff in home-based settings in Israel generally report slightly higher levels of practices across all dimensions of process quality compared with their colleagues in centre-based settings.
- Staff report that they and their colleagues engage regularly in practices facilitating language development. Fewer staff report so with respect to practices facilitating numeracy and literacy development. In the four participating countries, more than 20% of staff report none or very little engagement in several practices facilitating literacy and numeracy development. However, in all countries, three-quarters or more staff report that singing songs and rhymes applies "a lot" to their centres, a practice that supports literacy development.
- Staff across all participating countries put practices facilitating emotional development and prosocial behaviour at the core of their work with children under age 3, with more than 90% of staff reporting that these practices apply "a lot" or "to some extent" in their centre. Staff in Israel, and particularly in home-based settings, report more use of practices around facilitating play than staff in other countries.
- In all countries, more than half of staff report that practices facilitating communication with parents about activities with children and children's development apply very well to their centres. However, many fewer staff report that their centre encourages parents to do learning activities with their children at home.
- A majority of staff report engaging in practices adapted to children's needs and interest to support their development, learning and well-being across domains. Among these adaptive practices, adapting activities to children's level of development is quite frequent compared to other practices, such as adapting activities to differences in children's cultural background.
- Staff report helping children to follow the rules and calming those who are upset more than other behavioural support practices, including helping children understand the consequences if they do not follow the rules.
- The relationship between process quality and the centre's characteristics varies across countries. In Norway, staff working in centres with a higher proportion of children under age 3 report lower levels of engagement in practices facilitating play and prosocial behaviour. Staff in Israel working in larger centres report higher levels of engagement in numeracy development. In Norway, staff in larger centres report more practices to facilitate parent/guardian engagement. In contrast, in Germany, staff in larger centres report fewer practices to facilitate play.
- Staff working in larger target groups, staff serving as teachers and staff with pre-service training that included elements specifically for working with children report higher levels of engagement in adaptive practices.

Introduction

The Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) offers international insight on staff impressions of their daily practices to support quality in their early childhood education and care (ECEC) settings. Children's interactions matter a lot for their development and well-being in ECEC settings, and for fostering an early interest in exploration and learning. Interactions that form children's daily experiences include those between ECEC staff and children, and among children in the setting as well as between staff and parents. Together, these interactions and experiences constitute process quality in ECEC. Process quality in ECEC can be facilitated through strong structural quality, particularly training and investment in the ECEC workforce (OECD, 2018[1]).

This chapter focuses on reports of different dimensions of process quality from staff working with children under age 3. Staff in both centre- and home-based settings are considered, providing comparisons between these types of settings and across participating countries (Denmark, Germany, Israel and Norway). The chapter then describes how characteristics of centres, including their size and the age mix of children, and characteristics of staff, such as level and content of pre-service training, are associated with staff reports of process quality.

Overview of process quality

Process quality describes the daily interactions children have in their ECEC settings, including with staff/teachers, space and materials, other children, their families, and the wider community. Process quality represents the dimensions of ECEC quality that are most proximal to children and most closely linked to children's development and well-being (OECD, 2018[1]). Children under age 3 are especially reliant on relationships with others to meet their basic needs and engage with the world, making sensitive and responsive interactions with ECEC staff all the more important (Jamison et al., 2014[2]).

When staff interact with very young children in a warm and responsive manner, children have opportunities to develop in ways that allow them to become increasingly active in their environments. For example, sensitive interactions with staff support young children's self-regulatory and language skills, which in turn shape their future interactions with adults, peers and others (Hoff, 2006[3]; Rhoades et al., 2011[4]). In ECEC settings, structured activities throughout the day provide opportunities for staff and young children to have warm, reciprocal interactions, but the routines of caring for children under age 3 (e.g. feeding, diapering) are equally important aspects of education and care in settings for this age group (Chazan-Cohen et al., 2017[5]; Guedes et al., 2020[6]; Slot et al., 2015[7]). ECEC settings are considered high quality when children experience individualised support for positive behaviour and exposure to developmental and educational activities that build on play and routines (OECD, 2019[8]; Pianta, Downer and Hamre, 2016[9]).

Process quality in ECEC settings is linked with the development and well-being of children under age 3. For example, in settings with higher quality interactions, children in this age range show better communication, problem-solving, fine motor skills, engagement, adaptive behaviours and stronger growth in emotion regulation (Araujo, Dormal and Schady, 2019[10]; Mortensen and Barnett, 2018[11]; Pinto et al., 2019[12]). Process quality in home-based settings is also positively associated with socio-emotional development and cognitive and language competence among toddlers (Colwell et al., 2013[13]; Lahti et al., 2015[14]).

Characteristics of staff, including their beliefs about what is important for young children, are associated with their pedagogical practices and the quality of the ECEC setting. For example, staff who view children's ability to co-operate easily with others as being of high importance also report more practices to facilitate children's prosocial behaviour and emotional development in their ECEC centres (OECD, 2019[8]). Similarly, staff's educational background and their roles and responsibilities in the classroom/playroom matter for supporting process quality. Specifically, staff's pre-service education is associated with higher

quality language-learning environments, a better emotional climate, and more staff sensitivity in centres and home-based settings for children under age 3 (Barros et al., 2018[15]; King et al., 2016[16]; Schaack, Le and Setodji, 2017[17]; Slot et al., 2015[7]). Although pre-service education in general is important for staff working in settings with children under age 3, training specifically to work with young children is critical for process quality (Schaack, Le and Setodji, 2017[17]).

Staff within the same classroom/playroom have different levels of quality interactions with children, potentially related to staff roles (OECD, 2019[8]; Pauker et al., 2018[18]). Often, assistants engage in more tasks related to care routines compared with teachers or leaders, creating different sorts of opportunities to engage with children (Van Laere, Peeters and Vandenbroeck, 2012[19]). These divisions of labour among staff may contribute to differences in the quality that children experience, even within a single classroom/playroom.

In addition to the different staff present in the classroom/playroom, the different characteristics of children within the group can contribute to different levels of process quality. Some research suggests that having a wider age range of children in a single group may lead to lower process quality in centre-based settings, although this is not necessarily the case in home-based settings (Eckhardt and Egert, 2018[20]; Linberg et al., 2019[21]). Although the research base in this area is limited, mixed age groups in centres specifically serving children under age 3 may offer lower process quality than groups with more narrow age ranges (OECD, 2018[1]).

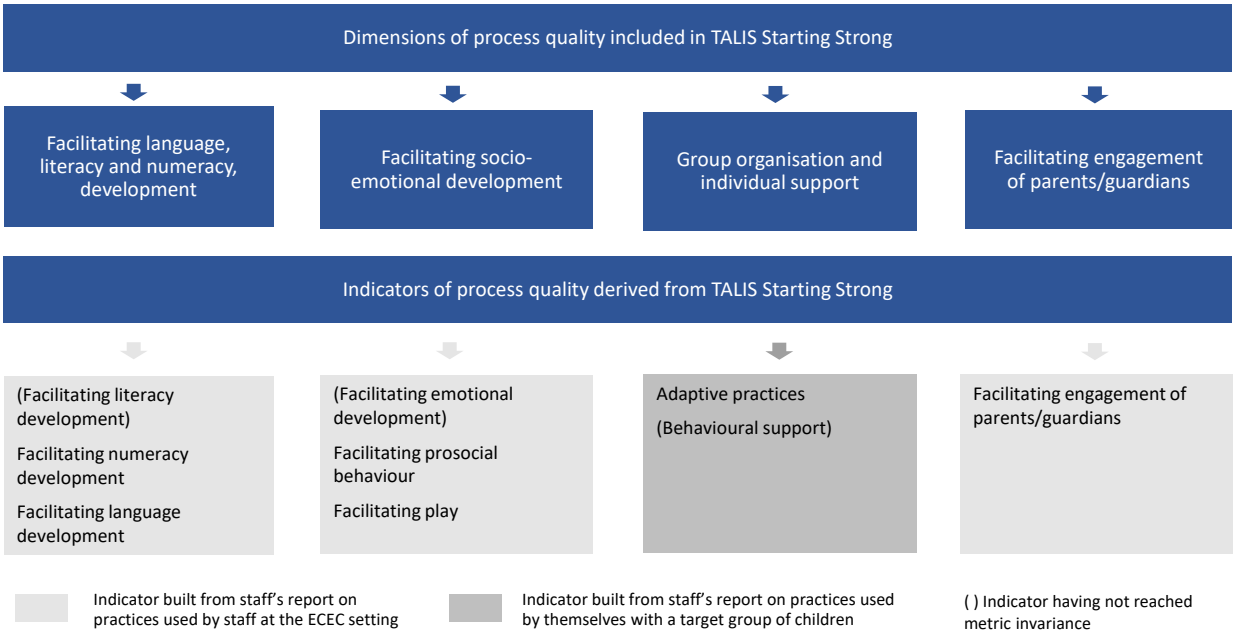
Similarly, characteristics of ECEC settings can shape process quality. Associations between process quality and setting-level characteristics, such as management by a public versus a private entity, may be particularly sensitive to a country's policy context. For example, some studies have found that differences in process quality are not observed between municipal and private centres in Norway and in the People's Republic of China (Bjørnestad and Os, 2018[22]; Hu et al., 2019[23]). Setting characteristics may also contribute to features of the classroom/playroom by contributing to the resources available. Settings located in urban areas may have greater access to educated staff compared to settings in rural areas, but stress may be higher among staff in urban settings than in rural ones (Barros et al., 2016[24]; Hu et al., 2014[25]). In addition, findings from Germany suggest that larger ECEC settings may provide lower process quality for children under age 3, perhaps related to materials being shared across classrooms/playrooms and thereby limiting their availability to children throughout the day (Linberg et al., 2019[21]).

Process quality in TALIS Starting Strong

TALIS Starting Strong collects information about practices and interactions in ECEC settings along four major dimensions (Sim et al., 2019[26]) (Figure 4.1):

1. practices facilitating children's language, literacy and numeracy development (setting level)
2. practices facilitating children's socio-emotional development (setting level)
3. practices facilitating group organisation and individual support (group level)
4. practices facilitating the engagement of parents or guardians in the development and well-being of their children and their participation in the activities of the centre (setting level).

Figure 4.1. The different measures of process quality in TALIS Starting Strong



Note: Annex A provides further information on measurement invariance for all indicators of process quality.

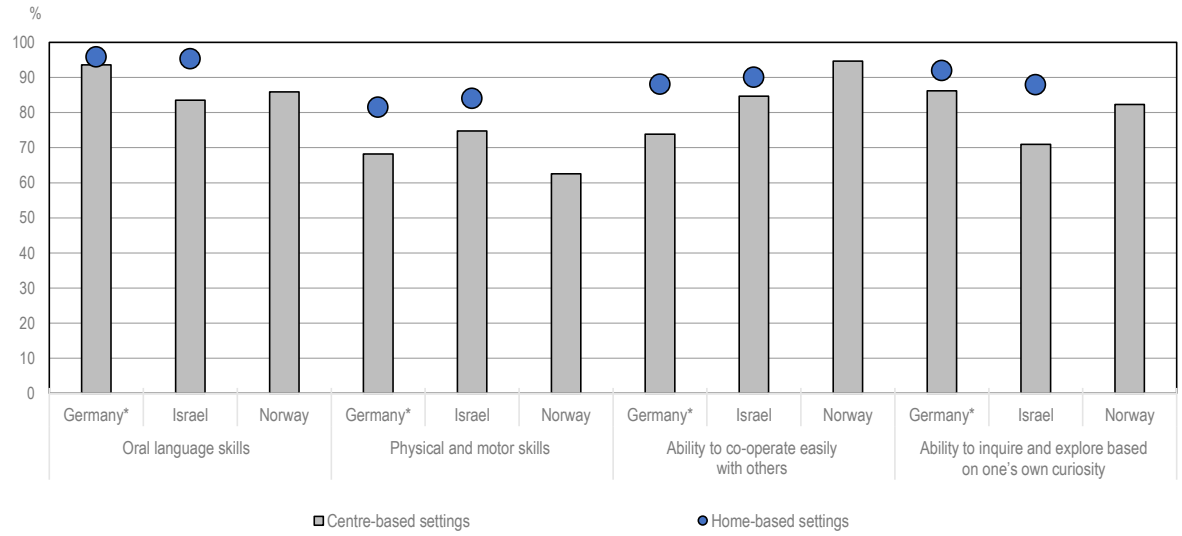
These practices contribute to the quality of interactions between staff and children as well as among children. In addition, these practices shape the interactions between staff and parents, which are of paramount importance for children under age 3. Close partnerships allow staff and parents to share information about a child, promoting continuity between ECEC settings and the home and enhancing the quality of care in both settings (Coelho et al., 2019[27]; Layland and Smith, 2015[28]; Owen et al., 2008[29]).

Staff participating in TALIS Starting Strong report on practices to support process quality that are used by staff at their settings (facilitating language, literacy and numeracy development; facilitating socio-emotional development; facilitating engagement of parents/guardians) and practices that they use themselves with a target group of children (group organisation and individual support). In addition, staff report on their beliefs about how important it is for their ECEC settings to develop four types of skills and abilities in children to prepare them for life in the future: 1) oral language skills; 2) physical and motor skills; 3) ability to co-operate easily with others; 4) ability to inquire and explore based on one's own curiosity.

In general, staff across countries rate all four of the skills and abilities as being of high importance to help prepare children for life in the future (Figure 4.2). Overall, home-based staff tend to endorse the importance of these areas more strongly than centre-based staff. Helping children develop physical and motor skills is the area the fewest staff rated as of "high importance" among centre-based staff in Germany and Norway, whereas in Israel staff report more similar levels of importance across all four domains. Centre-based staff in Germany place the highest importance on developing children's oral language skills whereas centre-based staff in Norway place the highest importance on developing children's ability to co-operate easily with others.

Figure 4.2. Early childhood education and care staff's beliefs about skills and abilities that will prepare children for life in the future

Percentage of staff reporting that the following beliefs are of high importance to prepare children for life in the future



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147802

The organisation of the target group

Staff participating in TALIS Starting Strong provide information on the composition of a target group of children, as well as the practices used to support process quality in this group. Staff provide information on the children included in this group as well on the other members of the workforce present within the group. The target group is defined as the first group of children staff worked with on their last working day before the survey. Target groups are not necessarily fixed, like in primary schools, with the same staff and the same children across the year. Moreover, for some staff, the target group may reflect a staff member's full day of work, potentially involving a shifting number of children (e.g. some children may only be present for a half-day) as well as different staff who are present at different times. In addition, the target groups are not necessarily representative of such groups within countries because target groups were not part of the sampling design and multiple staff members could have reported on the same target group. The child and staff composition of target groups is important to provide information on the contexts of interactions that are the foundation of process quality.

Understanding staff practices in the context of target group size is also important because group size is one of the characteristics of structural quality that can support process quality: when working with small groups of children, staff may be able to interact with children in more responsive ways. Studies from several countries show that smaller group size is associated with higher process quality in both centre- and home-based settings for children under age 3 (OECD, 2018[1]). Smaller groups may enable staff to spend more time giving children individualised attention, thereby enhancing process quality. Larger groups can mobilise more staff, though, to compensate for the higher number of children.

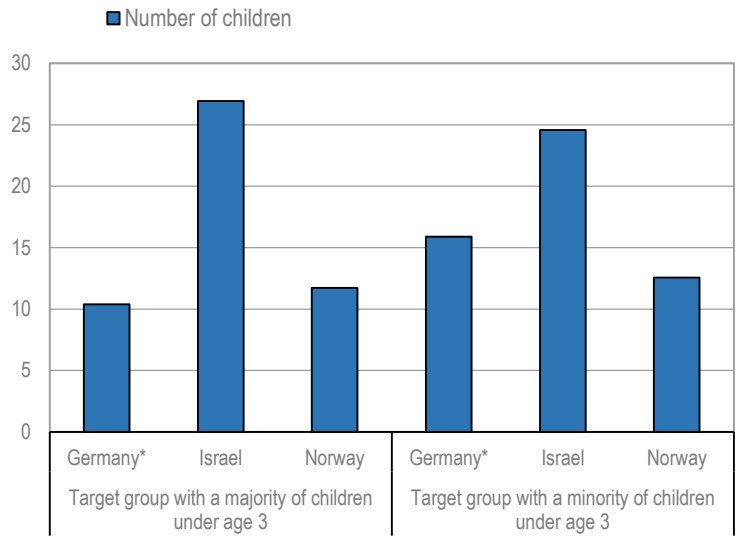
The typical size of the target group varies across countries and according to age composition (Figure 4.3 A). In Germany and Norway, target groups tend to be smaller than in Israel. In Germany (and in Denmark, with low response rates), target groups with a majority of children under age 3 are even smaller (approximately 10 children) than target groups with a minority of children in this age range (approximately 16 children in Germany and more than 20 in Denmark). In Norway, the target group size is within this range, with a smaller difference between groups that have a majority versus a minority of children under age 3. In contrast, in Israel, where target groups comprise a classroom that can be organised into smaller sub-groups, target groups include more than 24 children. The average number of staff working in the target group also varies across countries, ranging from less than four in target groups serving a majority of children under age 3 in Germany to more than seven in Israel (Figure 4.3 B).

To better understand the numbers of staff and children who interact in the target groups, the number of staff per ten children is used to summarise the average number of staff (i.e. leaders, teachers, assistants or others) with whom the group of children may interact. This summary ratio is not to be confused with child-to-staff ratios used for regulatory purposes, which consider the minimum number of staff who must be present based on the number of children present. Staff reports on the target group composition in TALIS Starting Strong refer to a specific situation and are not necessarily restricted to staff and children who were all present at the same time. As a result, the number of staff per ten children in the target group cannot be interpreted as a measurement of the human resource available in the target group.

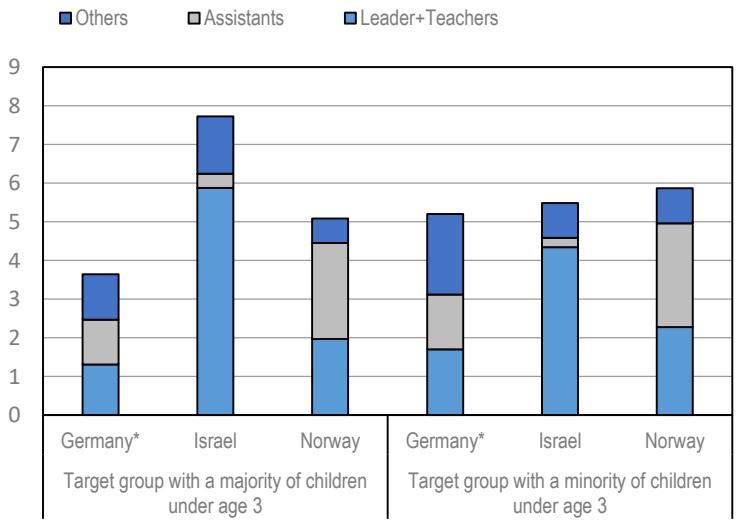
TALIS Starting Strong target groups generally comprise four staff per ten children in Israel, although this number can mask differences between different age groups even within this young age range (Figure 4.4). In Israel, distinctions are made between groups comprised of infants (15 months and younger), young toddlers (16-24 months old) and toddlers (25-36 months old), with different numbers of staff available in each of these age groups. In Germany, there are approximately five staff per ten children, irrespective of the proportion of children under age 3. In Norway, however, the number of staff per ten children is greater for target groups with a minority of children under age 3 (seven staff per ten children) compared to those with a majority of children under age 3 (five or six staff per ten children), meaning that groups with older children interact with more staff members. This finding may be related to more differentiated roles among staff (e.g. staff for special activities) or greater sharing of time across several staff members to complete tasks without children (see Chapter 3) for groups with more older than younger children. Nonetheless, in both younger and older groups in Norway, children are in contact with more staff members than they are in Germany or Israel. In Denmark (with low response rates), there are also six staff per ten children in target groups with a majority of children under age 3, but contrary to Norway, there are fewer staff (five) if the target group has a minority of children under age 3.

Figure 4.3. Target group size and staff composition in early childhood education and care settings

A. Target group size, according to target group age



B. Workforce composition, according to target group age



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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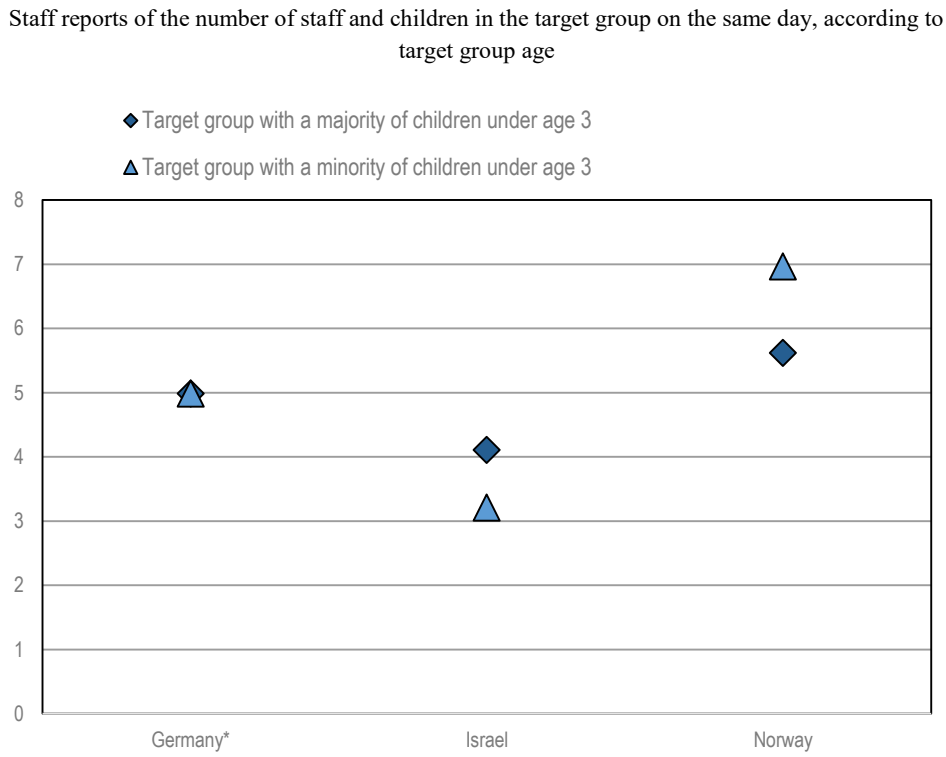
Figure 4.4. Average number of staff per ten children in the target group in early childhood education and care settings



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147840

Staff reports of process quality

Process quality is difficult to measure. TALIS Starting Strong investigates process quality by asking staff how much they and others in the ECEC setting engage in practices known to foster child development and well-being. These reports, though useful, need to be interpreted with caution. Because of social desirability, staff could give answers that overstate the level of process quality. Alternatively, staff who have more experience in settings providing strong process quality may be more critical of the level of quality provided by themselves and their colleagues. In order to limit these biases, for practices associated with language, literacy and numeracy development, socio-emotional development, and parental engagement, staff are asked to report not about their own behaviours, but about those of all staff in their settings. For group organisation and individual support, staff report on their own work with the target group. In addition to limitations of self-reports on process quality, cultural differences in how staff report on the practices that comprise process quality can make it challenging to compare results across countries. To address this challenge, regression analyses presented in this chapter employ scales that are constructed to facilitate cross-country comparisons in the associations between staff characteristics and process quality (OECD, 2019[31]) (see Annex B for more details).

This section covers all dimensions of process quality measured in TALIS Starting Strong following a similar method for each dimension (see Figure 4.1). A graph aggregating practices through a single indicator associated with each dimension is presented first to provide a broad account of the dimension, covering all possible response options. Although it does not distinguish individual practices within each dimension of process quality, this presentation allows cautious comparisons between countries and, more importantly, across home-based and centre-based settings. The graphs also show the extent to which staff report **not** engaging in these aspects of process quality and how staff in some countries favour more positive responses. The graphs are followed by tables that give further details of the specific practices used by staff, focusing on the percentage of staff who report that each practice is used "a lot".

Facilitating language, literacy and numeracy development in early childhood education and care settings

TALIS Starting Strong includes three dimensions of ways that staff working with children under age 3 can facilitate cognitive development: 1) language; 2) literacy; and 3) numeracy (see Figure 4.1). Early language skills set the foundation for children's learning across many different domains of education, including helping children build socio-emotional competence through their communication with others. ECEC staff can facilitate children's language development through practices such as encouraging children to talk to one another or rephrasing statements to make sure children have understood. The specific practices associated with facilitating literacy and numeracy in TALIS Starting Strong are tailored to the types of activities staff may engage in with children under age 3. They include things such as singing songs or playing games with letters or numbers.

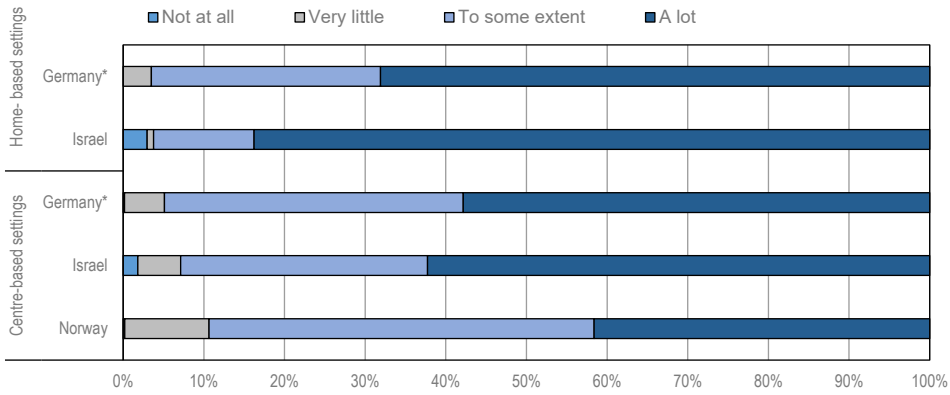
Practices associated with language development are widely shared across countries and settings (Figure 4.5) and staff report practices in line with their beliefs about the high importance of this area of development (see Figure 4.2). Approximately nine out of ten staff report that in their settings, staff engage "to some extent" or "a lot" in the four practices associated with language development. Staff in home-based settings tend to report these practices more frequently than staff in the same countries working in centre-based settings. Very few staff report settings that do not engage at all in any of these practices.

Practices associated with literacy and numeracy development are widespread, but reported less extensively than those related to language development (Figure 4.5). However, this does not necessarily imply that staff attach less importance to these aspects of development: staff may engage in practices to support literacy and numeracy less often throughout the day and yet still have a meaningful impact with these practices. Contrary to language development, a small but notable proportion of staff report that practices to support literacy and numeracy development are "not at all" used in their settings, in particular in Israel. Similar patterns in use of practices to support language development more often than those to support literacy and numeracy development are also observed with staff working at the pre-primary level (OECD, 2019[8]).

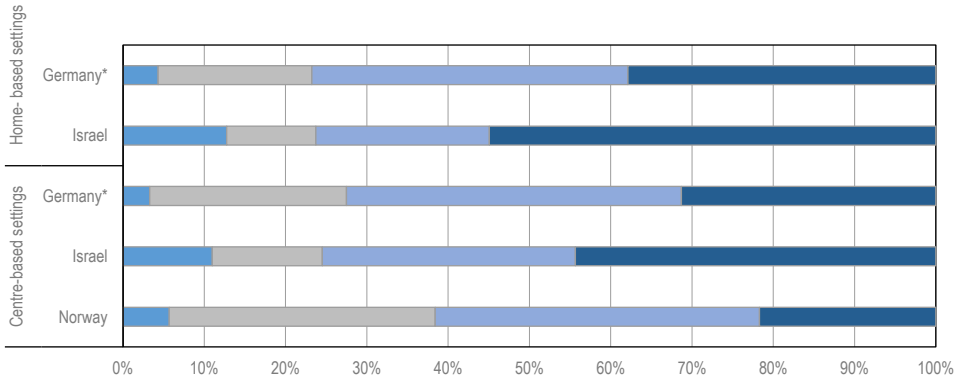
Compared to Germany and Israel, staff in Norway generally report less frequent use of practices across all three dimensions of process quality facilitating aspects of cognitive development. This could be due to different response styles or a difference in practices. Moreover, compared with Israel and in some cases Germany, staff in Norway less often report that some practices "do not apply at all" in their centres, indicating that staff in Norway may prefer the middle response categories rather than simply using practices to support process quality less often than their colleagues in other countries.

Figure 4.5. Facilitating language, literacy and numeracy development in early childhood education and care settings

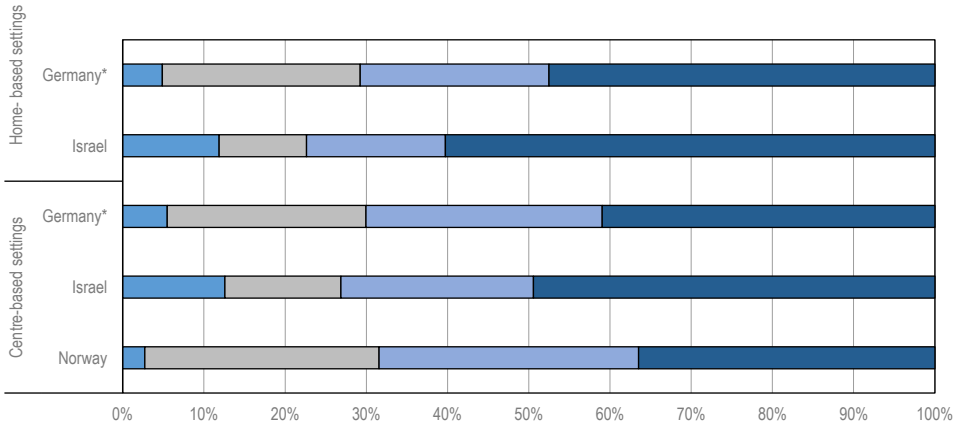
A. Facilitating language development: Average percentages of staff reporting the following over four practices



B. Facilitating numeracy development: Average percentages of staff reporting the following over five practices



C. Facilitating literacy development: Average percentages of staff reporting the following over three practices



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: Practices considered for each area of process quality are shown in Table 4.1.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147859

Turning to the specific practices used to support language development, staff report that all four practices associated with this dimension are widely applied in their settings (Table 4.1). For each of these four practices, half or more of staff in Denmark (with low response rates), Germany and Israel report they apply "a lot" to staff in their settings. Importantly, all of these practices describe ways in which staff communicate with children, rather than specific activities. These behaviours can occur frequently throughout the day, including during more specific types of activities, and this might explain why staff consider that these statements apply "a lot".

Table 4.1. Practices facilitating language, literacy and numeracy development in early childhood education and care settings

Percentage of respondents reporting that the following statements apply a lot to staff, by type of setting

	Centre-based settings				Home-based settings		
	Germany*	Israel	Norway	Denmark**	Germany*	Israel	Denmark**
Facilitating language							
Encourage children to talk to each other	67%	64%	47%	74%		88%	
Position themselves at the children's height when talking or listening	56%	71%	36%	64%		87%	
Rephrase or recite statements to make sure children have been understood	49%	56%	35%	61%		77%	
Model the correct word rather than correcting the child directly	60%	58%	48%	75%		83%	
Facilitating numeracy development							
Use sorting activities by shape or colour	35%	56%	18%	14%		73%	
Play number games	23%	19%	13%	12%		16%	
Sing songs about numbers	19%	39%	19%	29%		55%	
Help children to use numbers or to count	38%	50%	36%	42%		58%	
Refer to groups of objects by the size of the group	41%	58%	22%	23%		73%	
Facilitating literacy development							
Play word games with the children	36%	41%	20%	38%		56%	
Play with letters with the children	9%	19%	16%	22%		28%	
Sing songs or rhymes with children	77%	88%	74%	94%		97%	

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in bias in the estimates reported and limit comparability of the data.
Notes: Colours vary from dark grey (0%) to white (50%) to dark blue (100%). Home-based settings serve a small number of children in Norway and were not included in the survey. Due to the limited sample sizes, which resulted in large standard errors, only colours (no percentages) are displayed for staff working in home-based settings in Denmark and Germany.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147992

Staff across countries do not prioritise the same practices for facilitating numeracy development. In Israel, staff most frequently report “using sorting activities by shape or colour” and “referring to groups of objects by the size of the group”. Staff in Germany also report using these practices more than some of the other practices, but staff in Denmark (with low response rates) and Norway more frequently report they “help children to use numbers or to count”, rather than the practices favoured in Israel. In Denmark (with low response rates), Israel and Norway, staff report that “play number games” does not apply as much as the four other practices. In Germany, singing songs about numbers is reported to apply less than the other practices facilitating numeracy.

Staff overwhelmingly favour “singing songs or rhymes with children” than the other practices facilitating literacy development. In all countries, including Norway, at least three-quarters of staff report this practice applies “a lot” in their settings. “Playing word games”, and even more so “playing with letters”, are not extensively used. However, as emphasised in Figure 4.5, few staff report these practices not being used at all.

Facilitating socio-emotional development in early childhood education and care settings

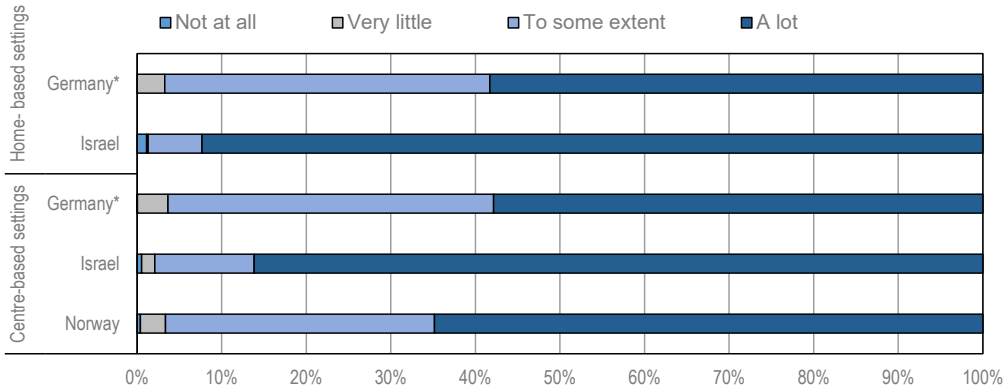
Facilitating socio-emotional development covers three aspects in TALIS Starting Strong: 1) prosocial behaviour; 2) emotional development; and 3) play. For many children, ECEC settings, whether home-based or centre-based, offer their first opportunities to interact with adults and children outside of their families and to establish their own relationships with these staff and peers. Practices associated with socio-emotional development help children make these first social relationships meaningful and enriching.

As with language development, staff reports of practices facilitating prosocial behaviour are in line with their beliefs of the importance of this area (see Figure 4.2). Staff across all settings apply practices facilitating prosocial behaviour broadly (Figure 4.6). In all four participating countries, on average, more than 95% of staff report that these practices apply to staff in their settings “to some extent” or “a lot”. This is all the more true in Israel, where over 80% of staff report these practices apply “a lot”, in home-based and centre-based settings.

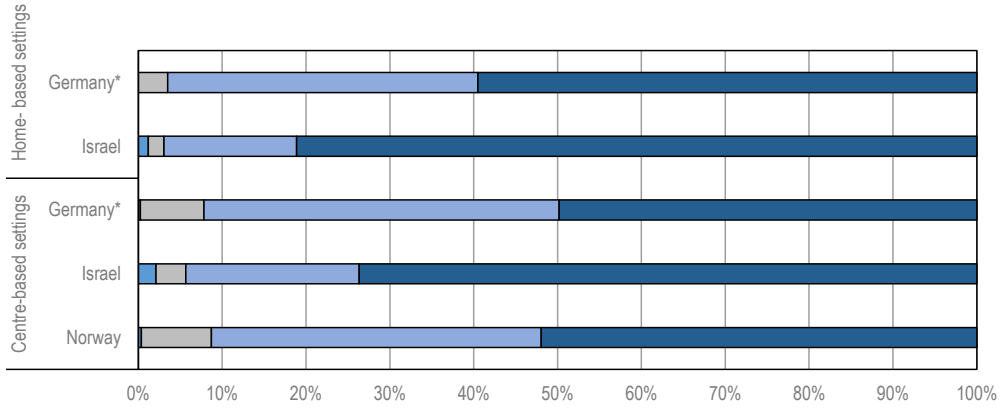
The engagement of staff working with children under age 3 in practices facilitating emotional development is also very high across all countries. Few staff report that the four practices proposed as facilitating emotional development do not apply in their settings. Practices associated with facilitating play follow the same pattern, with a very high level of engagement reported by staff in all settings.

Figure 4.6. Facilitating socio-emotional development in early childhood education and care settings

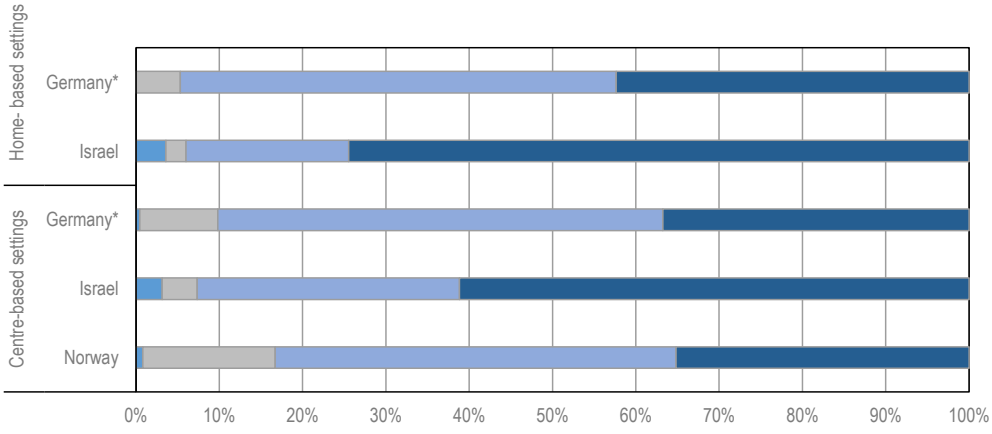
A. Facilitating prosocial behaviour: Average percentages of staff reporting the following over three practices



B. Facilitating emotional development: Average percentages of staff reporting the following over four practices



C. Facilitating play: Average percentages of staff reporting the following over three practices



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Note: Practices considered for each area of process quality are shown in Table 4.2.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147878

Staff are somewhat more likely to report practices facilitating prosocial behaviour, such as encouraging children if they comfort each other, apply “a lot”, than practices around facilitating emotional development, like helping children to talk about what makes them sad, but the variations are not large (Table 4.2). In Denmark (with low response rates) and Israel, staff are even more likely to report that these practices apply “a lot” to staff in their centres compared with other countries.

In all four countries, fewer staff report that practices around facilitating play apply “a lot” than practices facilitating prosocial behaviour and emotional development. However, the comparison across countries is similar for all three aspects of facilitating socio-emotional development: for every practice around facilitating play, staff in Denmark (with low response rates) and Israel tend to report that the practices apply more than their colleagues in Germany and Norway, and in particular around showing enjoyment when joining in children’s play.

Table 4.2. Practices facilitating socio-emotional development in early childhood education and care settings

Percentage of respondents reporting the following statements apply a lot to staff, by type of setting

	Centre-based settings				Home-based settings		
	Germany*	Israel	Norway	Denmark**	Germany*	Israel	Denmark**
Facilitating prosocial behaviour							
Encourage sharing amongst children	49%	84%	63%	70%		90%	
Encourage children to help each other	63%	87%	64%	89%		94%	
Encourage children if they comfort each other	61%	88%	67%	62%		93%	
Facilitating emotional development							
Hug the children	59%	89%	59%	89%		90%	
Talk with children about feelings	53%	73%	56%	82%		80%	
Help children to talk about what makes them happy	43%	74%	51%	72%		87%	
Help children to talk about what make them sad	44%	58%	42%	76%		68%	
Facilitating play							
If invited, join in with the children's play	37%	45%	29%	45%		66%	
When staff play with children, the children are allowed to take the lead	23%	67%	37%	38%		73%	
Staff show enjoyment when joining the children's play	50%	71%	40%	79%		85%	

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in bias in the estimates reported and limit comparability of the data.
Notes: Colours vary from dark grey (0%) to white (50%) to dark blue (100%). Home-based settings serve a small number of children in Norway and were not included in the survey. Due to the limited sample sizes, which resulted in large standard errors, only colours (no percentages) are displayed for staff working in home-based settings in Denmark and Germany.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934148011

Group organisation and individual support to children in the target group

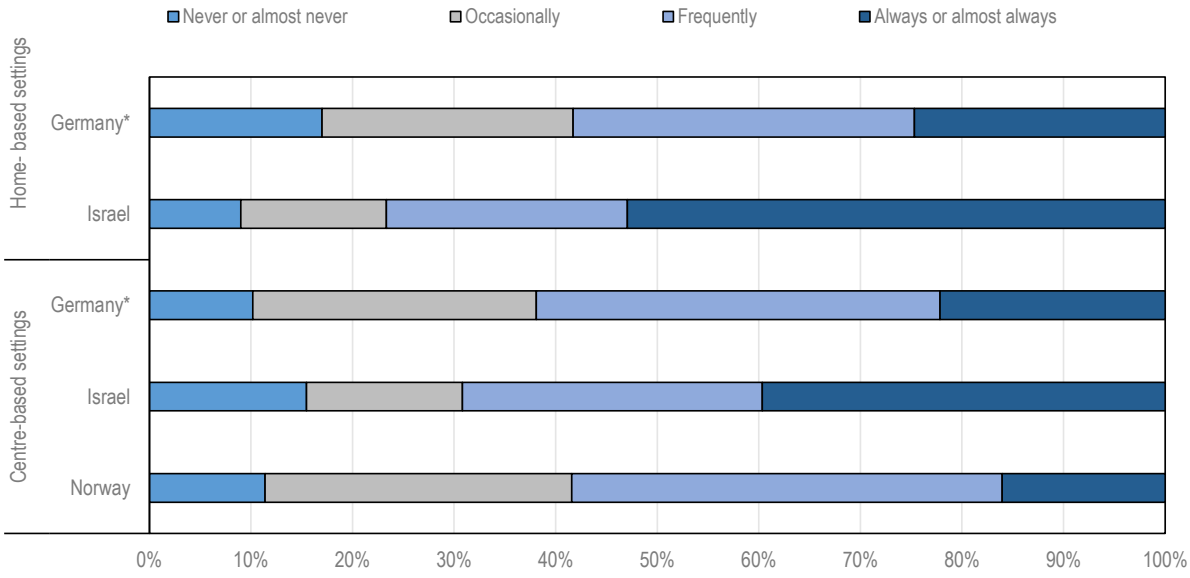
While practices facilitating language, literacy and numeracy development, and socio-emotional development target specific learning areas for young children, staff working in ECEC settings also have to make sure that these activities are carried out in good conditions and benefit all children. TALIS Starting Strong considers two different aspects of how staff manage group organisation and provide children with individual support in the classroom/playroom. First, adaptive practices describe how staff organise the activities they do with children, including how activities are adapted to children's needs. Second, behavioural support covers the practices staff use to ensure children's behaviours are supportive to learning, development and well-being in the classroom/playroom. Staff report on both of these aspects of process quality with respect to their own work with the target group.

In all countries, staff tend to adopt adaptive practices in their work with the target group (Figure 4.7). In centre-based settings, about 60% of staff in Germany and Norway report that, on average, they engage with these practices at least frequently, with the proportion of staff reporting they do so always or almost always close to 20%. In Israel, staff report more often that they engage in these practices always or almost always (40%), but comparatively fewer staff report frequent engagement and these two answers, once combined, give a proportion only slightly higher than that in Germany and Norway (70%). Staff in home-based settings give similar answers in Germany, but in Israel home-based staff report greater use of adaptive practices than their colleagues in centre-based settings. Importantly, in all countries and settings, some staff report never engaging in these practices.

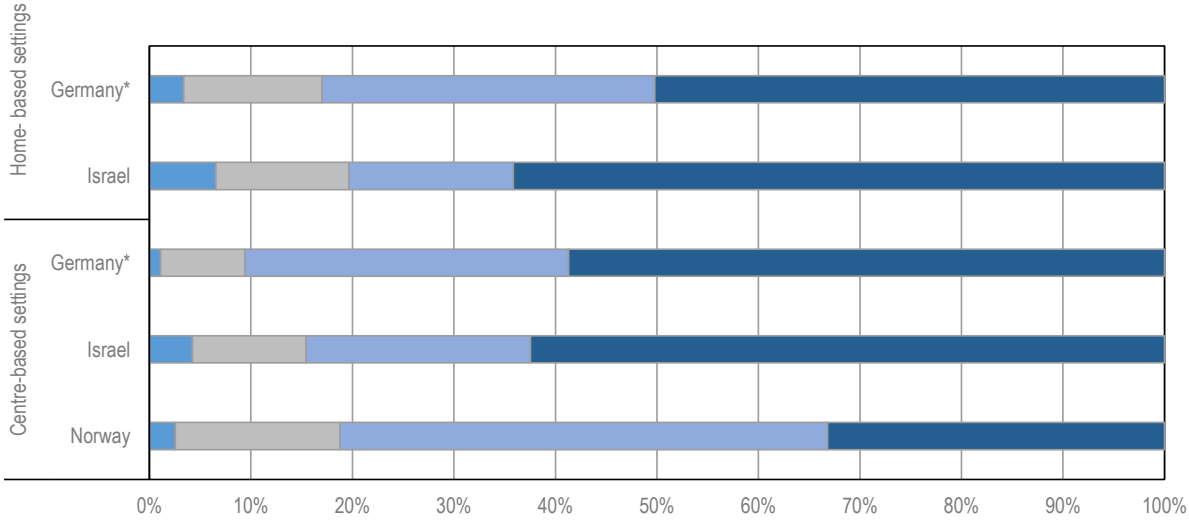
Staff broadly engage in all practices providing behavioural support to children. In contrast to the dimensions of process quality previously explored, in centre-based settings, staff in Germany report applying these practices as much as staff do in Israel. In both countries, 60% of staff report engaging in these practices with children in their target group "always or almost always", more so than staff in Norway (more than 30%). However, once staff who report that they engage "frequently" are taken into account as well, reports in all three countries are similar, with 80-90% of staff reporting one of these answers, on average. Fewer staff in home-based settings in Germany report using behavioural support practices "always or almost always", but the proportion of home-based staff who engage in these practices at least frequently is similar to centre-based settings in both Germany and Israel.

Figure 4.7. Adaptive practices and behavioural support in early childhood education and care settings

A. Adaptive practices: Average percentages of staff reporting the following over five practices



B. Behavioural support: Average percentages of staff reporting the following over four practices



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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Staff do not engage with the same intensity in all adaptive practices. Giving different activities to suit different children's development or interests are the most common practices within each country (Table 4.3). Variation in the frequency of these and other less common adaptive practices depends on the country, with staff in Israel tending to report such practices more often. However, a similarly small proportion of staff across countries report "always or almost always" adapting activities to differences in children's cultural background, meaning such practices are not common in settings for children under age 3 in the participating countries. Notably, the use of adaptive practices "always or almost always" is higher in home-based settings in Israel than in centre-based settings, highlighting the ways in which staff working with a small group of children may be able to tailor the education and care provided for each child.

Turning to specific practices to provide behavioural support, with the exception of Norway, a majority of staff report they engage "always or almost always" in helping children to follow the rules and in calming children who are upset. The other two practices are less frequently reported. Nonetheless, close to a majority of staff in Germany and Israel report that they "always or almost always" help children to understand the consequences if they do not follow the rules, and that they "always or almost always" ask children to quiet down once an activity begins. Although staff in Norway report less that they "always or almost always" engage in these activities, they tend to rather report that they engage "frequently" in them (Figure 4.7).

Table 4.3. Practices facilitating group organisation and individual support in early childhood education and care settings

Percentage of respondents reporting they engage in the following activity always or almost always, by type of setting

	Centre-based settings				Home-based settings		
	Germany*	Israel	Norway	Denmark**	Germany*	Israel	Denmark**
Adaptive practices							
I set daily goals for the children	15%	46%	14%	23%		56%	
I explain how a new activity relates to children's lives	10%	35%	6%	7%		43%	
I give different activities to suit different children's interests	35%	50%	28%	29%		73%	
I give different activities to suit different children's level of development	42%	53%	27%	53%		79%	
I adapt my activities to differences in children's cultural background	9%	15%	6%	8%		27%	
Behavioural support							
I help children to follow the rules	70%	75%	38%	50%		76%	
I calm children who are upset	74%	79%	50%	82%		91%	
When the activities begin, I ask children to quiet down	49%	51%	19%	37%		47%	
I help children understand the consequences if they do not follow the rules	41%	44%	26%	24%		43%	

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in bias in the estimates reported and limit comparability of the data.
Notes: Colours vary from dark grey (0%) to white (50%) to dark blue (100%). Home-based settings serve a small number of children in Norway and were not included in the survey. In Israel, all staff working in centre-based settings work with a target group including only children under age 3. Due to limited sample sizes, which resulted in large standard errors, only colours (no percentages) are displayed for staff working in home-based settings in Denmark and Germany.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

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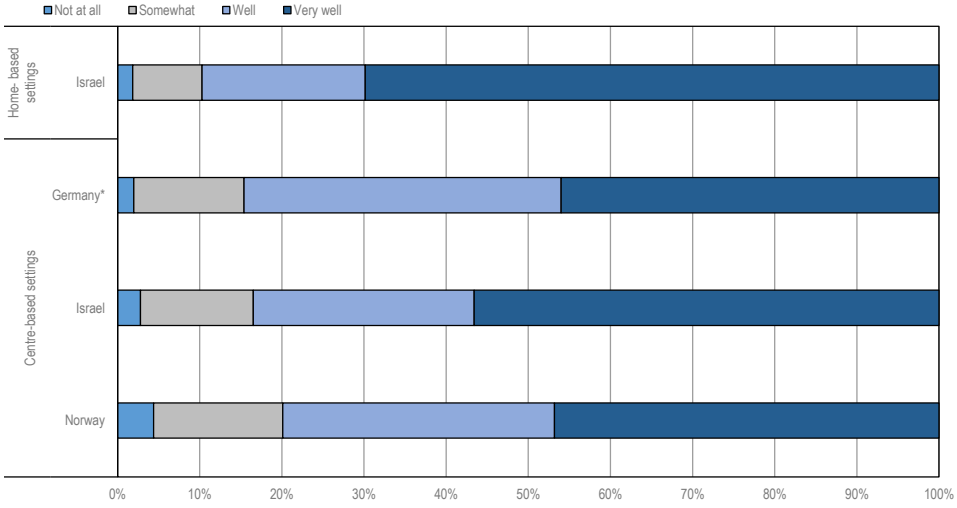
Facilitating the engagement of parents and guardians in early childhood education and care settings

Parents are children's first educators and caregivers. It is important for children's development that staff and parents collaborate in building an enriching and consistent environment. Across all countries, a majority of staff report good engagement of staff with parents in their settings (Figure 4.8). On average across the four practices describing engagement with parents, about 50% of centre-based staff report that these apply "very well" to their settings. This proportion rises to more than 80% once staff reporting that the practices apply "well" in addition to "very well". This is true across all countries and concerns home-based settings as well.

Figure 4.8. Facilitating the engagement of parents and guardians in early childhood education and care settings

Average percentages of staff reporting the following over four practices



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Notes: Four items are included in the average. Germany is not included among home-based settings because two practices were excluded from the questionnaire.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147916

Across all countries, staff report that parents and guardians can get in touch with staff easily. Informing parents about their children and daily activities is also seen as describing the ECEC settings "very well" in most cases. However, many fewer staff think that their settings encourage parents to play and do learning activities with their children at home (Table 4.4). Staff reports in home-based settings are similar, as are findings for pre-primary staff (OECD, 2019[8]).

Table 4.4. Practices to facilitate the engagement of parents and guardians in early childhood education and care settings

Percentage of staff reporting these statements describe how they engage with parents very well, by type of setting

	Centre-based settings				Home-based settings		
	Germany*	Israel	Norway	Denmark**	Germany*	Israel	Denmark**
Parents/guardians can get in touch with the staff easily	69%	69%	74%	87%	1	86%	
Parents/guardians are informed about the development well-being and learning of their children on a regular basis	56%	65%	49%	59%		75%	
Parents/guardians are informed about daily activities on a regular basis	44%	57%	52%	73%		64%	
Parents/guardians are encouraged by staff to play and do learning activities with their children at home	15%	36%	12%	20%	1	54%	

* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
** Low response rates in the survey may result in bias in the estimates reported and limit comparability of the data.
1. The question was not administered in Germany because it was optional.
Note: Colours vary from dark grey (0%) to white (50%) to dark blue (100%). Home-based settings serve a small number of children in Norway and were not included in the survey. Due to limited sample sizes, which resulted in large standard errors, only colours (no percentages) are displayed for staff working in home-based settings in Denmark and Germany.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm

StatLink https://doi.org/10.1787/888934148049

The association between target group and staff characteristics and process quality

Staff reports of process quality in their centres and in their target groups are shaped by many different factors. Regression analysis allows an examination of how many of these factors that are measured in TALIS Starting Strong contribute to process quality both within and across countries. This section describes how characteristics of centres are associated with six indicators of process quality: 1) facilitating language development; 2) facilitating numeracy development; 3) facilitating prosocial behaviour; 4) facilitating play; 5) facilitating the engagement of parents/guardians; and 6) adaptive practices. In addition, characteristics of staff and their target groups are examined in association with the use of adaptive practices in the target groups. The results described in this section are associations between the characteristics of the centre, staff and target group and process quality after accounting for other relevant characteristics measured in TALIS Starting Strong. This analytic approach allows an examination of variability in process quality within countries, as well as comparisons across countries (see Annex B for further details on the regression models and Annex C for complete regression results).

Centre characteristics and process quality

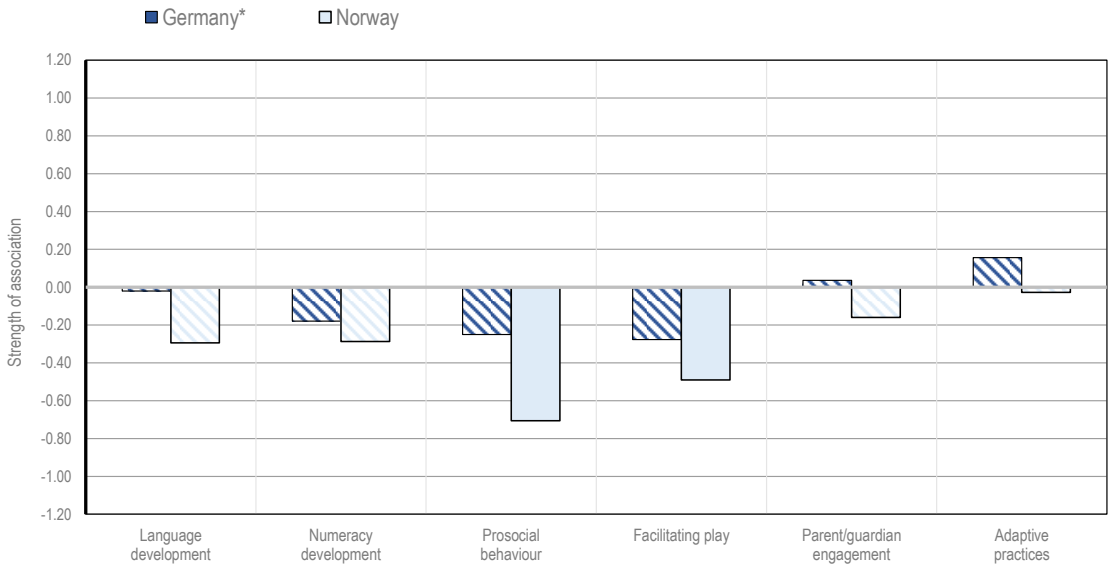
Characteristics of ECEC centres are important for understanding process quality. For example, the age mix of children in the centre, its size or the type of governance (public versus private) all have implications for the practices used by staff. Notably, associations between centre characteristics and the aspects of process quality measured in TALIS Starting Strong are often specific to individual countries.

In Denmark, Germany and Norway, it is possible to compare centres that serve a larger proportion of children under age 3 (more than 30%) to centres serving a smaller proportion of children in this age range (see Chapter 3). As Figure 4.9 shows, staff generally report using fewer practices associated with process quality in centres with more children under age 3. However, this pattern is only statistically significant in Norway, where staff report using fewer practices to facilitate prosocial behaviour and play in centres with

a larger proportion of children under age 3 compared to centres with fewer children under age 3. This finding suggests that staff in Norway may see more opportunities to facilitate socio-emotional development in centres with children who are slightly older.

Figure 4.9. Strength of association between process quality and age composition in early childhood education and care centres

Staff reports of practices to support process quality in centres with more than 30% of children under age 3 compared to centres with less than 30% of children under age 3



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Notes: Coefficients from the OLS regression of the indicators of process quality on centre age composition. Other variables in the regression include: age composition of the target group; staff experience; role in the target group; contractual status; number of children in the centre (quartiles); number of staff per child in the centre (quartiles); percentage of children from socio-economically disadvantaged homes in the centre; centre urban/rural location; and public/private management. See Annex B for more details on variables included in the regression model. Statistically significant coefficients are marked in a darker shade (see Annex B). Israel is not included in the graph because all early childhood education and care settings included are non-integrated.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147935

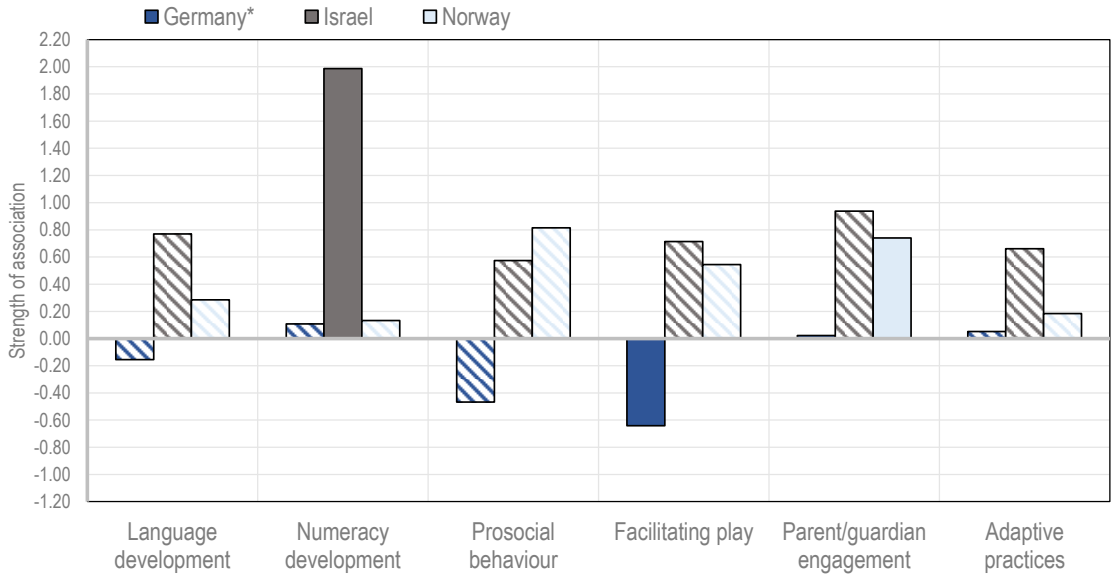
TALIS Starting Strong also allows a comparison of process quality dimensions based on the concentration of children from socio-economically disadvantaged homes in the centre. However, there are no significant differences in the reports of process quality among staff in centres with more than 10% of children from socio-economically disadvantaged homes compared to staff in centres with a smaller concentration of children from socio-economically disadvantaged homes (see Annex C for the full regressions results).

The size of centres (in terms of the number of children) and the number of staff per ten children in the centres are also relevant for process quality, as these matter for the resources that are available (see Chapter 3). With regard to centre size, staff in larger centres in Israel report more use of practices facilitating numeracy development, whereas staff in larger centres in Norway report more use of practices to facilitate parent/guardian engagement (Figure 4.10). Similarly, in Norway, where there are more staff per ten children in the centre, staff report more practices facilitating language development in their centres; results for other countries are not statistically significant. In Israel and Norway, larger centres and to some extent more staff per ten children may enable staff to access resources, such as materials, specific

protocols or additional staff time, that support process quality. In contrast, in Germany, staff in larger centres report less use of practices facilitating play. Staff in larger centres in Denmark (with low response rates) also report less use of practices to support process quality. In these countries, having more children in the centre may limit the resources (e.g. time, materials) available to staff to engage in practices that support process quality. Larger centres may also take different approaches than smaller centres in terms of the culture and priorities, potentially de-emphasising activities like staff engagement in children's play.

Figure 4.10. Strength of association between process quality and centre size

Staff reports of practices to support process quality in centres in the top quarter of centre size compared to centres in the bottom quarter of centre size



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Notes: Coefficients from the OLS regression of the indicators of process quality on centre size. Quarters refer to 25% of early childhood education and care (ECEC) centres in a country. The bottom quarter refers to the 25% of ECEC centres within a country that register the lowest number of children, while the top quarter refers to the 25% of centres within a country that register the highest number of children. Other variables in the regression include: age composition of the target group; staff experience; role in the target group; contractual status; age composition of children in the centre; number of staff per child in the centre (quartiles); percentage of children from socio-economically disadvantaged homes in the centre; centre urban/rural location; and public/private management. See Annex B for more details on variables included in the regression model. Statistically significant coefficients are marked in a darker shade (see Annex B).
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147954

In Norway, staff in centres located in cities of 15 000 inhabitants or more report more use of practices to facilitate prosocial behaviour and play than their colleagues in more rural areas (see Annex C for the full regressions results). These findings suggest that centres in more urban areas in Norway may have strategies in place to promote use of practices facilitating socio-emotional development among their staff.

In Germany, staff working in centres that are publicly managed report more use of practices to facilitate numeracy development compared to staff in centres that are privately managed (see Annex C for the full regressions results). In contrast, in Denmark (with low response rates) staff in publicly managed centres report less use of practices in several dimensions of process quality. These findings indicate that centres in Denmark and Germany may have different priorities around practices to support process quality depending on the management structure in place. Staff in publicly managed centres in Norway and Israel do not report significantly different practices compared to their colleagues in privately managed centres in any dimension of process quality.

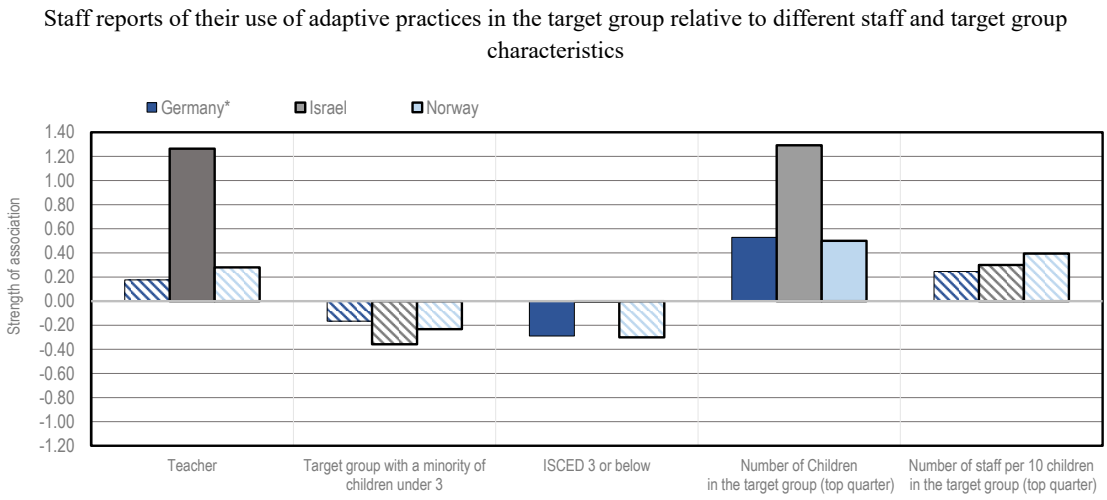
Staff and target group characteristics and use of adaptive practices

Staff report on their own use of adaptive practices in the target group, allowing an examination of this dimension of process quality as it relates to characteristics of staff and the target group. The level of engagement staff report in adaptive practices depends on their own characteristics, in particular in Israel (Figure 4.11). In Israel (in Denmark as well, with low response rates), staff with a teacher role (compared to other roles in the ECEC setting), report greater use of adaptive practices. The items that comprise adaptive practices indicate that staff choose the activities they do with children, which is consistent with teachers having more responsibilities in the target group. In contrast to the other countries where assistants are key members of the ECEC workforce, centres in Israel do not have assistants. This may help explain why teachers' roles are notably distinct from other staff in target groups in Israel.

Initial training and educational attainment are also linked with the use of adaptive practices (Figure 4.11). In Germany, staff who did not pursue education beyond high school report a lower engagement in adaptive practices, while staff in Israel who report that their pre-service training included elements to work with children report much higher engagement. Importantly, although not all coefficients are significant, the direction of each relationship is the same in Germany, Israel and Norway. These findings suggest that adaptive practices are shaped by staff characteristics in a way that is consistent across countries.

The use of adaptive practices is linked to a greater extent to the number of children in the target group than to the number of staff per ten children (Figure 4.11). In Germany, Israel and Norway (but not in Denmark, with low response rates), staff working in a target group in the top quarter of the number of children report using adaptive practices more often than their colleagues. The number of staff per ten children has a positive association with the use of adaptive practices, but coefficients are not significant. These findings suggest that larger target groups require, or allow, staff to do more specific activities to meet the needs of individual children, possibly creating flexible sub-groups of children within the target group.

Figure 4.11. Strength of association between staff use of adaptive practices and characteristics of staff and of the target group



* Estimates for sub-groups and estimated differences between sub-groups need to be interpreted with care. See Annex A for more information.
Notes: Coefficients from the OLS regression of the indicator of process quality "adaptive practices" on teacher role, age composition of the target group, training to work with children, educational attainment, number of children in the target group (quarters) and number of staff per ten children in the target group (quarters). Other variables in the regression for the adjusted coefficients include: experience; contractual status; percentage of children from socio-economically disadvantaged homes in the target group; centre urban/rural location; and public/private management. See Annex B for more details on the variables included in the regression model. Statistically significant coefficients are marked in a darker shade (see Annex B). Teachers are compared to assistants in Germany and Norway, but are compared to "other" staff in Israel, where early childhood education and care settings do not typically include assistants.
Source: OECD (2019[30]), *TALIS Starting Strong 2018 Database*, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm.

StatLink https://doi.org/10.1787/888934147973

Conclusion and policy implications

This chapter presented findings from TALIS Starting Strong on the practices staff report using in settings for children under age 3 as well as the organisation of groups within these settings and staff beliefs about the skills and abilities that are important for ECEC settings to help children develop. Large percentages of staff in all four participating countries report that most practices included in the survey are widely used in their settings. However, specific practices to facilitate literacy and numeracy development are less widespread than practices to facilitate language and socio-emotional development. These reports are consistent with staff beliefs about the importance of helping children develop oral language and social skills and may reflect the importance of helping children learn to communicate and adapt to group settings before focusing on additional learning areas.

Together, the findings from this chapter suggest several areas where policy can support staff in settings for children under age 3 to foster learning, development and well-being for all children:

Better engaging parents. Very young children benefit from strong partnerships between their parents/guardians and ECEC staff. TALIS Starting Strong results show that there is room to deepen and expand the ways in which ECEC staff communicate with and support parents of children under age 3. Policy implications include strengthening the role of parents in curriculum frameworks and preparing staff through pre-service training and continuing professional development to build bridges between ECEC settings and children's homes. In addition, campaigns to inform parents about the importance of development during the first years of life can encourage families to engage more closely with ECEC staff.

Ensure adequate resources across ECEC settings. In Israel and Norway, staff working in larger centres (those with more children) report more practices to support aspects of children's development; the opposite is true in Denmark (with low response rates) and Germany. Although different policy responses are needed for these different contexts, governments should ensure that quality is supported regardless of centre size. In Israel and Norway, this can involve helping smaller settings to access materials and resources, including sufficient staff time and ongoing professional development for current staff, to help promote practices around quality. In Denmark and Germany, larger centres may need support to ensure that all classrooms/playrooms within the setting have sufficient materials and resources to help staff engage in high-quality interactions with all children throughout the day.

Prepare staff to individualise practices to support children's development. Staff in all four countries report regularly adapting practices to children's individual needs. However, practices around connecting activities to children's lives and adapting activities to children's cultural backgrounds are less common than practices around adapting to individual children's interest and level of development. This could reflect a willingness to treat all children equally or a lack of preparation to adapt practices in these ways. As findings show that staff's educational background contributes to greater use of adaptive practices, training and professional development can be enhanced to help staff integrate more adaptive practices in their work, particularly related to children's daily life and cultural backgrounds. A greater focus on these specific types of adaptive practices can also serve as a way to engage more closely with families.

References

Araujo, M., M. Dormal and N. Schady (2019), "Childcare quality and child development", *The Journal of Human Resources*, Vol. 54/3, pp. 656-682, http://dx.doi.org/10.3368/jhr.54.3.0217.8572R1. [10]

Barros, S. et al. (2016), "Infant child care quality in Portugal: Associations with structural characteristics", *Early Childhood Research Quarterly*, Vol. 37, pp. 118-130, https://doi.org/10.1016/j.ecresq.2016.05.003. [24]

Barros, S. et al. (2018), "The quality of caregiver-child interactions in infant classrooms in Portugal: The role of caregiver education", *Research Papers in Education*, Vol. 33/4, pp. 427-451, https://doi.org/10.1080/02671522.2017.1353676. [15]

Bjørnestad, E. and E. Os (2018), "Quality in Norwegian childcare for toddlers using ITERS-R", *European Early Childhood Education Research Journal*, Vol. 26/1, pp. 111-127, https://doi.org/10.1080/1350293X.2018.1412051. [22]

Chazan-Cohen, R. et al. (2017), "Working toward a definition of infant/toddler curricula: Intentionally furthering the development of individual children within responsive relationships", *OPRE Report #2017-15*, Office of Planning, Research and Evaluation, https://www.acf.hhs.gov/sites/default/files/opre/nitr_report_v09_final_b508.pdf (accessed on 8 December 2017). [5]

Coelho, V. et al. (2019), "Predictors of parent-teacher communication during infant transition to childcare in Portugal", *Early Child Development and Care*, Vol. 189/13, pp. 2126-2140, https://doi.org/10.1080/03004430.2018.1439940. [27]

Colwell, N. et al. (2013), "New evidence on the validity of the Arnett Caregiver Interaction Scale: Results from the Early Childhood Longitudinal Study-Birth Cohort", *Early Childhood Research Quarterly*, Vol. 28/2, pp. 218-233, http://dx.doi.org/10.1016/j.ecresq.2012.12.004. [13]

Eckhardt, A. and F. Egert (2018), "Process quality for children under three years in early child care and family child care in Germany", *Early Years*, http://dx.doi.org/10.1080/09575146.2018.1438373. [20]

Guedes, C. et al. (2020), "Activity settings in toddler classrooms and quality of group and individual interactions", *Journal of Applied Developmental Psychology*, Vol. 67, pp. 100-110, https://doi.org/10.1016/j.appdev.2019.101100. [6]

Hoff, E. (2006), "How social contexts support and shape language development", *Developmental Review*, Vol. 26/1, pp. 55-88, https://doi.org/10.1016/j.dr.2005.11.002. [3]

Hu, B. et al. (2019), "Global quality profiles in Chinese early care classrooms: Evidence from the Shandong Province", *Children and Youth Services Review*, Vol. 101, pp. 157-164, https://doi.org/10.1016/j.childyouth.2019.03.056. [23]

Hu, B. et al. (2014), "Examining program quality disparities between urban and rural kindergartens in China: Evidence from Zhejiang", *Journal of Research in Childhood Education*, Vol. 28/4, pp. 461-483, http://dx.doi.org/10.1080/02568543.2014.944720. [25]

Jamison, K. et al. (2014), "CLASS-Infant: An observational measure for assessing teacher-infant interactions in center-based child care", *Early Education and Development*, Vol. 25/4, pp. 553-572, http://dx.doi.org/10.1080/10409289.2013.822239. [2]

King, E. et al. (2016), "Classroom quality in infant and toddler classrooms: Impact of age and programme type", *Early Child Development and Care*, Vol. 186/11, pp. 1821-1835, https://doi.org/10.1080/03004430.2015.1134521. [16]

Lahti, M. et al. (2015), "Approaches to validating child care quality rating and improvement systems (QRIS): Results from two states with similar QRIS type designs", *Early Childhood Research Quarterly*, Vol. 30/B, pp. 280-290, https://doi.org/10.1016/j.ecresq.2014.04.005. [14]

Layland, J. and A. Smith (2015), "Quality in home-based child care for under-two-year old children in Aotearoa New Zealand: Conceptualising quality from stakeholder perspectives", *New Zealand Journal of Educational Studies*, Vol. 50/2, pp. 269-284, http://dx.doi.org/10.1007/s40841-015-0019-7. [28]

Linberg, A. et al. (2019), "Quality of toddler childcare: Can it be assessed with questionnaires?", *Early Child Development and Care*, Vol. 189/8, pp. 1369-1383, https://doi.org/10.1080/03004430.2017.1380636. [21]

Mortensen, J. and M. Barnett (2018), "Emotion regulation, harsh parenting, and teacher sensitivity among socioeconomically disadvantaged toddlers in child care", *Early Education and Development*, Vol. 29/2, pp. 143-160, https://doi.org/10.1080/10409289.2017.1371560. [11]

OECD (2019), *Providing Quality Early Childhood Education and Care: Results from the Starting Strong Survey 2018*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/301005d1- [8]

en.

OECD (2019), *TALIS Starting Strong 2018 Database*, OECD, Paris, http://www.oecd.org/education/school/oecdtalisstartingstrongdata.htm. [30]

OECD (2019), *TALIS Starting Strong 2018 Technical Report*, OECD Publishing, Paris, http://www.oecd.org/education/talis/TALIS-Starting-Strong-2018-Technical-Report.pdf. [31]

OECD (2018), *Engaging Young Children: Lessons from Research about Quality in Early Childhood Education and Care*, Starting Strong, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264085145-en. [1]

Owen, M. et al. (2008), "Relationship-focused child care practices: Quality of care and child outcomes for children in poverty", *Early Education and Development*, Vol. 19/2, pp. 302-329, https://doi.org/10.1080/10409280801964010. [29]

Pauker, S. et al. (2018), "Caregiver cognitive sensitivity: Measure development and validation in early childhood education and care (ECEC) settings", *Early Childhood Research Quarterly*, Vol. 45, pp. 45-57, https://doi.org/10.1016/j.ecresq.2018.05.001. [18]

Pianta, R., J. Downer and B. Hamre (2016), "Quality in early education classrooms: Definitions, gaps, and systems", *The Future of Children*, Vol. 26/2, pp. 119-138, https://futureofchildren.princeton.edu/sites/futureofchildren/files/resource-links/starting_early_26_2_full_journal.pdf. [9]

Pinto, A. et al. (2019), "Quality of infant child care and early infant development in Portuguese childcare centers", *Early Childhood Research Quarterly*, Vol. 48/3, pp. 246-255, https://doi.org/10.1016/j.ecresq.2019.04.003. [12]

Rhoades, B. et al. (2011), "Demographic and familial predictors of early executive function development: Contribution of a person-centered perspective", *Journal of Experimental Child Psychology*, Vol. 108/3, pp. 638-662, https://doi.org/10.1016/j.jecp.2010.08.004. [4]

Schaack, D., V. Le and C. Setodji (2017), "Home-based child care provider education and specialized training: Associations with caregiving quality and toddler social-emotional and cognitive outcomes", *Early Education & Development*, Vol. 28/6, pp. 655-668, https://doi.org/10.1080/10409289.2017.1321927. [17]

Sim, M. et al. (2019), "Starting Strong Teaching and Learning International Survey 2018 conceptual framework", *OECD Education Working Papers*, No. 197, OECD Publishing, Paris, https://dx.doi.org/10.1787/106b1c42-en. [26]

Slot, P. et al. (2015), "Associations between structural quality aspects and process quality in Dutch early childhood education and care settings", *Early Childhood Research Quarterly*, Vol. 33, pp. 64-76, https://doi.org/10.1016/j.ecresq.2015.06.001. [7]

Van Laere, K., J. Peeters and M. Vandenbroeck (2012), "The education and care divide: The role of the early childhood workforce in 15 European countries", *European Journal of Education*, Vol. 47/4, pp. 527-541, https://doi.org/10.1111/ejed.12006. [19]

Annex A. Technical notes on sampling procedures, response rates and adjudication for TALIS Starting Strong 2018

Sampling procedures and response rates

The objective of the Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) 2018 was to obtain a representative sample in each participating country of staff and leaders providing early childhood education and care (ECEC) for each level of ECEC (settings for children under age 3 and ISCED 02) in which the country participated. This report includes only settings for children under age 3.

The international sampling plan for TALIS Starting Strong used a stratified two-stage probability sampling design. This means that staff (second-stage units, or secondary sampling units) were randomly selected from the list of in-scope staff in each of the randomly selected ECEC settings (first-stage units, or primary sampling units). The leader at each setting (i.e. the person with the most responsibility for administrative, managerial and/or pedagogical leadership) was automatically selected for participation as well. For countries with integrated ECEC systems that participated in data collection for both pre-primary education and settings for children under age 3, settings serving both age groups were split between the two samples so that each setting could be selected for participation in only one level of ECEC. A more detailed description of the survey design and its implementation can be found in the *TALIS Starting Strong 2018 Technical Report* (OECD, 2019[1]). Staff for children under age 3 are those who, as part of their regular duties in their centre, provide learning opportunities for children in this age group. There is no minimum cut-off for how much time staff need to be engaged with children under age 3 to be included in the TALIS Starting Strong universe.

The international target population of TALIS Starting Strong restricts the survey to those staff and leaders who work in officially registered settings providing ECEC. ECEC settings exclusively for children with special educational needs are deemed out of scope. Also considered out of scope are: short-term substitute educators (to replace staff on sick leave); nannies and other people involved in informal arrangements; volunteers who occasionally came in to provide a special activity; auxiliary staff (e.g. cleaners, cooking staff) who did not interact regularly in a pedagogical manner with the children; and medical and therapeutic staff (e.g. speech therapists, occupational therapists) whose work was primarily non-pedagogical.

For national reasons, participating countries could choose to restrict the coverage of their national implementation of TALIS Starting Strong. For example, Norway decided to exclude home-based settings (within the homes of the respective staff) from their sample, while Denmark, Germany and Israel included these settings in the universe of settings providing services for children under age 3. Participating countries were asked to keep sample exclusions to a minimum by keeping the national survey population to at least 95% of ECEC staff. The national project manager for each country was required to document the reasons for any exclusions.

Sample size requirements

To allow for reliable estimation and modelling while permitting some amount of non-response, TALIS Starting Strong 2018 set the minimum number of ECEC settings per country for each population of interest (pre-primary education and settings for children under age of 3) at 180. Within each setting, the minimum number of staff members selected was eight. If there were fewer than eight staff members in a setting, then all staff members were selected. Participating countries could choose to augment their national sample by selecting more settings, or by selecting more staff within each selected setting, or by increasing both. In some cases, because the average number of staff in the settings was lower than the number expected in the international plan, the number of settings sampled was increased.

Adjudication process

The basic principle that guided the adjudication was to determine, for each participating country and for each level of ECEC, whether the data released to the countries are fit to provide policy-relevant, robust international indicators and analysis on staff and leaders. To establish fitness for use, a number of quality-assurance processes were designed and activated throughout the survey process. Some processes relied on expert advice and opinion, some on qualitative information and learned judgement, some on quantitative information. More detailed information is available in the *TALIS Starting Strong 2018 Technical Report* (OECD, 2019[1]).

During the adjudication session, each individual dataset (i.e. the combination of participating countries and levels of ECEC) was submitted to the same examination. In addition, both staff participation and leader participation were adjudicated for each combination of participating countries and levels of ECEC.

The issues evaluated concerned the questionnaire's adaptation to the national context, translation and verification, quality of the sampling frame, handling of out-of-scope and refusal units (i.e. staff and/or centres), within-centre sampling, data collection, data cleaning, quality observers' reports, participation rates, and overall compliance with the technical standards (see OECD (2019[1])). Once each survey process was assessed, a recommended rating was formulated, accounting for the participation rates and for any unresolved issues. The adjudication rules, based on participation rates for leaders and staff, are shown in Tables A A.1 and A A.2.

Table A A.1. Adjudication rules for setting or leader data in TALIS Starting Strong 2018

Setting participation (returned leader questionnaires)		Risk of setting non-response bias	Rating
Before replacement	After replacement		
≥ 75%	≥ 75%		Good
≥ 50% but < 75%	≥ 75%		Fair (A)
	≥ 50% but < 75%	Low	Fair (C)
		High	Poor (D)
< 50%			Insufficient

Table A A.2. Adjudication rules for staff data in TALIS Starting Strong 2018

Setting participation (minimum of 50% staff participation)		Staff participation after setting replacement	Risk of staff non-response bias	Rating
Before replacement	After replacement			
≥ 75%	≥ 75%	≥ 75%		Good
		≥ 50% but < 75%		Fair (A)
≥ 50% but < 75%	≥ 75%	≥ 75%		Fair (B)
		≥ 50% but < 75%	Low	Fair (C)
			High	Poor (D)
≥ 50% but < 75%	≥ 50% but < 75%			Poor (E)
< 50%	≥ 75%			Poor (F)
< 50%	< 75%			Insufficient

The following is a guide to help data users appreciate the limitations on use or quality:

- **Good:** The participating country's data can be used for all reporting and analytical purposes and should be included in international comparisons.
- **Fair (A):** National and subnational estimates can be produced. Some staff characteristics may suffer from larger standard errors (s.e.), hence the warning "Fair". No additional warnings to users appear necessary.
- **Fair (B, only for staff data adjudication):** National and subnational estimates can be produced. Some subnational estimates may be of lower precision (larger s.e.) if sample size is locally low, hence the warning "Fair". No additional warnings to users appear necessary.
- **Fair (C):**
  - National and subnational estimates can be produced.
  - Some subnational estimates may be of lower precision (larger s.e.) if sample size is locally low, hence the warning "Fair". But a note on data quality could appear, pointing to the outcome of the non-response bias analysis.
  - Since centre participation is somewhat lower than under (B), comparing subnational estimates should be done with care, as some of those results are based on few centres.
  - Comparing small subnational estimates with similar groups from other participating countries is unlikely to uncover any statistically meaningful differences as s.e. are likely too large.
- **Poor (D):**
  - In addition to the warnings issued for the previous category, a note should warn users of indications of non-response biases in some estimates.
  - Comparisons of subnational estimates should be limited to groups with larger sample sizes.
  - At this point, the sample represents 37-56% of the workforce, from a rather small sample of settings.
  - Comparisons with similar groups in other participating countries would not be encouraged.
- **Poor (E, only for staff data adjudication):** Subnational estimates would not be recommended. There should be a note pointing out the difficulty of obtaining a representative sample of settings.
- **Poor (F, only for staff data adjudication):** Limitations similar to those of (E), but there should be a note pointing out the difficulty of obtaining at least 50% participation of the selected sample of settings. There are risks of having a non-representative sample of settings.
- **Insufficient:** Weights should not be calculated for any official tabulations. Hence, data should not be incorporated in international tables, models, averages, etc.[1]

The participation rates and the adjudication rating per participating country for settings for children under age 3 are presented in Tables A A.3 and A A.4. These tables display the participation rate estimates that were the most favourable for the adjudication rating. The most favourable estimates could have been weighted or unweighted depending on the characteristics of the country and the staff and leader population.

Notes regarding use and interpretation of the data

This section lists issues to be noted regarding the sampling or field operations that should be considered when interpreting the data reported for the following countries:

- **Denmark**
  - Low response rates in the survey may have resulted in bias in the estimates reported and limit comparability of the data.
  - The data collection period was extended due to a public strike.
- **Germany**
  - The data collection period was reopened for a few weeks to encourage additional settings and staff to participate.
  - Non-response bias analysis failed to show that there is not a high risk of setting and staff non-response bias.
  - In two settings for children under age 3, staff listings were found to be incorrect; these settings were considered as “non-participant”.
  - A private company provided a list of settings that did not include all home-based settings. These home-based settings were excluded from the sample coverage and estimates of the number of excluded settings are based on national statistics.
- **Israel**
  - The data collection period was extended for settings serving children under age 3 to accommodate the split system in Israel.
- **Norway**
  - Home-based ECEC settings were excluded. The exclusion rate therefore exceeds 5%.

Table A A.3. Settings for children under age 3: Leader participation rates and recommended ratings

Participating country	Number of participating leaders	Estimated size of leader population	Leader participation before replacement (%)	Leader participation after replacement (%)	Recommended rating
Germany	273	48 699	50.7	57.2	Poor
Israel	226	5 042	93.3	97.4	Good
Norway	163	4 916	66.8	92.6	Fair
Denmark**	93	2 852	35.4	47.5	Insufficient

** Low response rates in the survey may result in bias in the estimates reported and limit comparability of the data.

Table A A.4. Settings for children under age 3: Staff participation rates and recommended ratings

Participating country	Number of participating centres	Number of participating staff in participating centres	Estimated size of staff population	Centre participation before replacement (%)	Centre participation after replacement (%)	Staff participation in participating centres (%)	Overall staff participation (%)	Recommended rating
Germany	272	1 171	268 310	50.3	57.0	89.7	51.1	Poor
Israel	225	1 113	23 201	90.7	95.3	97.4	92.8	Good
Norway	161	938	35 514	67.1	91.1	86.5	78.8	Fair

References

OECD (2019), *TALIS Starting Strong 2018 Technical Report*, OECD Publishing, Paris, http://www.oecd.org/education/talis/TALIS-Starting-Strong-2018-Technical-Report.pdf. [1]

Note

[1] At its November 2018 meeting in Paris, the TALIS Starting Strong 2018 Technical Advisory Group recommended that data from participating countries that had not reached 50% participation should nonetheless be weighted and displayed in tables.

Annex B. Technical notes on analyses in this report

Use of staff and centre weights

The statistics presented in this report were derived from data obtained through samples of centre and home-based settings, their leaders and their staff (Annex A). For these statistics to be meaningful for a country, they need to reflect the whole population from which they were drawn and not merely the sample used to collect them. Thus, survey weights must be used in order to obtain design-unbiased estimates of population or model parameters.

Final weights allow the production of country-level estimates from the observed sample data. The estimation weight indicates how many population units are represented by a sampled unit. The final weight is the combination of many factors reflecting the probabilities of selection at the various stages of sampling and the response obtained at each stage. Other factors may also come into play as dictated by special conditions to maintain the unbiasedness of the estimates (e.g. adjustment for staff working in more than one centre). A detailed description of the sampling and weighting procedures can be found in the *TALIS Starting Strong 2018 Technical Report* (OECD, 2019[1]).

Statistics presented in this report that are based on the responses of leaders and that contribute to estimates related to leaders were estimated using centre weights (CNTRWGT). Results based only on responses of staff or on responses of staff and leaders (i.e. responses from centre leaders were merged with staff responses) were weighted by staff weights (STAFFWGT).

Standard errors and significance tests

The statistics in this report represent estimates based on samples of staff and settings, rather than values that could be calculated if every staff member and leader in every country had answered every question. Consequently, it is important to measure the degree of uncertainty of the estimates. In TALIS Starting Strong, each estimate has an associated degree of uncertainty that is expressed through a standard error. The use of confidence intervals provides a way to make inferences about the population statistics in a manner that reflects the uncertainty associated with the sample estimates. From an observed sample statistic and assuming a normal distribution, it can be inferred that the corresponding population result would lie within the confidence interval in 95 out of 100 replications of the measurement on different samples drawn from the same population. The reported standard errors were computed with a balanced repeated replication (BRR) methodology.

Differences between sub-groups

Differences between sub-groups along staff (e.g. teachers and assistants) and setting characteristics (e.g. settings with a high concentration of children from socio-economically disadvantaged homes and centres with a low concentration of children from socio-economically disadvantaged homes) were tested for

statistical significance. In the case of differences between sub-groups, the standard error is calculated by taking into account that the two sub-samples are not independent.

Use of complex variables

Number of staff and children in the centre

TALIS Starting Strong asks leaders to indicate the number of staff in different categories working in their ECEC centre-based settings (leaders, teachers, assistants, staff for individual children, staff for special tasks, interns and other staff) and the number of girls and boys enrolled in the centre.

This information is used to derive several indicators describing the staff and children in the centre: 1) the share of different types of staff working at the centre (i.e. leaders, teachers, assistants and other staff); 2) the number of children at the centre; 3) the number of staff per child at the centre. If the centre covers pre-primary education (ISCED level 02) and provision for children under age 3, children and staff at both levels are considered in those numbers.

The number of staff per child at the centre refers to the total number of staff working in a centre, regardless of their role, divided by the total number of children enrolled. Because the number of staff per individual child is very low, when specific examples are cited for comparative purposes, they are presented as “number of staff per ten children”, which is obtained by multiplying the number of staff per child by ten. If the centre covers ISCED level 02 and provision for children under the age of 3, children and staff at both levels are considering in those numbers.

These indicators differ from administrative data capturing similar constructs, for instance because TALIS Starting Strong data does not allow differentiation between part-time and full-time employment at the centre level. Furthermore, regulations often refer to staffing requirements at the group or classroom/playroom level, rather than for the centre as a whole.

Number of staff and children in the target group

A similar set of variables is also built at the level of the target group. TALIS Starting Strong asks staff to take the example of the target group (the first group of children they were working with on the last working day before the day of the survey). Respondents indicate the category that best represents their role when working with this group of children (leader, teacher, assistant, staff for individual children, staff for special tasks, interns and other staff), as well as the number of girls and boys who made up the group.

This information is used to derive three indicators: 1) the number of children per target group; 2) the number of staff working with the same target group on the same day; and 3) the number of staff per child working with the same target group on the same day.

The number of staff per child with the same target group on the same day refers to the number of staff working with the same target group, regardless of their role, divided by the number of children in the target group. Because the number of staff per individual child is very low, when specific examples are cited for comparative purposes, they are presented as “number of staff per ten children”, which is obtained by multiplying the number of staff per child by ten.

The number of staff per child working with the same target group on the same day reflects a specific situation and is, therefore, different from the number of staff per child at the centre level. Staff may be working with the same target group at different moments of the day and not together, or may work part-time. Children in the same group may also change over the day into different group compositions, and children’s attendance hours can differ. This concept also differs from the regulated maximum numbers of

children per staff member, as that could include some restrictions on the staff to be included (depending on their qualifications or role) and can be specific to the age group of children.

As there is no indicator clarifying which target group each staff member referred to, several staff members may have referred to the same target group. This can result in a bias, as some target groups may be over-represented in the data.

National quarters

Some analysis using the number of children or the number of staff per child (at the centre or target group level) require these continuous variables to be transformed into interval categories. To accommodate for this need, the report makes use of national quarters. In each country, the weighted distribution of the continuous variable is split into equally sized categories, following the rank order. For instance, the cut-off point between the first quarter and the second quarter of the number of children per centre is the 25th percentile of the distribution of the number of children per centre in a specific country. As a result, the range of these intervals will differ across countries and vary with the properties of the distribution in each country.

Statistics based on regressions

Country-specific regression analyses were performed to examine the associations between different variables in centre-based settings. Multiple linear regression was used as the dependent (or outcome) variables were considered continuous, for example the process quality indicators. Outcome variables used in the report refer either to the centre or to the target group; the predictor and control variables are adjusted accordingly.

The centre (or target group) characteristics of interest can relate to one another and with other characteristics of the staff member who is reporting. Thus, the regression analyses were performed through an estimation of the associations of interest, holding all other characteristics constant. In the models, the associations between a specific centre (or target group) feature and the outcome variable were examined after accounting for a set of centre and staff characteristics, described below. Control variables included in the regression models were selected based on theoretical reasoning and to ensure comparability of the model across countries. For some countries, the number of staff or centres in a particular category was too low to draw conclusions. Results are presented only when they are based on a minimum of 30 staff or ten centres.

Staff and centre characteristics used in the models

The typical regression model used in this report includes the following set of variables as independent variables. In some cases additional variables of interest are added depending on the analysis purpose while in other cases only a single predictor is used in the models. Tables providing complete regression results for all models presented in the report provide specific information on the variables included in respective models (see Annex C).

- Staff education level is aggregated into three categories: secondary education or below (ISCED level 3 or below); post-secondary non-tertiary education or short-cycle tertiary education (ISCED level 4 or 5); and bachelor's degree or equivalent or more (ISCED level 6 or more), which is set as the reference.
- Staff specifically trained to work with children versus staff without specific training (without specific training as the reference).

- Staff experience refers to the number of years of experience in any ECEC centres, in three categories: less than 5 years; between 5 and 9 years; and more than 9 years, which is set as the reference.
- Permanent employment versus fixed-term contracts/self-employment (two categories with fixed-term contracts as the reference).
- Working full time versus part time (part-time as the reference).
- Leader/Teacher: the respondent is either a leader or a teacher in the target group. All other categories, including assistants, are grouped and taken as the reference.
- Centre in city: the centre is in a municipality with more than 15 000 people, with a location with fewer people taken as the reference.
- Public management versus private management (private management as the reference).
- Number of children in the centre (or target group), in quarters. In each country, the distribution of answers from leaders on the number of children can be divided into four equal quarters with increasing numbers of children per centre.

  The first quarter is set as the reference: the respondent works in a centre (or target group) with a number of children among the 25% lowest of the country distribution.
- Number of staff per child, in quarters: the total number of staff working in the centre (or target group), regardless of their role, divided by the number of children in the centre (or target group).

  The first quarter is set as the reference: the respondent works in a centre (or target group) with a number of staff per child among the 25% lowest of the country distribution.
- Concentration of children from socially disadvantaged homes: the proportion of children from socio-economically disadvantaged homes in the centre (target group) is greater than or equal to 11% with a proportion of 10% or less as the reference.
- Target group age: the target group has a majority of children under age 3, with target groups with a minority of children under age 3 as the reference.
- Number of hours of work without children per week, in halves. In each country, the distribution of the number of hours of work without children per week can be divided into two equal halves with an increasing number of hours of work without children, with the lower half as reference.
- Centre proportion of children under age 3: the proportion of children under age 3 in the centre is greater or equal to 30%, with a proportion of less than 30% as a reference.

Strength of association

The strength of association between two variables (indicator, staff or centre characteristic) relates to the magnitude of the corresponding unstandardised coefficient of a regression in which one of the variables is the dependent variable and the other is among the independent variables.

Assessing process quality in TALIS Starting Strong

The quality of the various interactions between the ECEC workforce, children and parents involves several dimensions, corresponding to major domains of children's learning, development and well-being. In TALIS Starting Strong, each dimension of process quality is measured with questions on practices reported by staff as being used by staff at the ECEC setting or by themselves with the target group (the first group of children that they worked with on their last working day before the survey). Each dimension of process quality can be summarised with a set of indicators or by analysing the questions asked of staff.

The indicators of process quality are the result of extensive scale evaluation using guidelines and experience from TALIS 2018 and prior cycles and are used in this report for regression analysis. Through

the scaling evaluation process, items included in the survey on interactions between children and staff and between parents/guardians and staff or children are grouped into indicators summarising responses from multiple questions into indicators of several practices. These include seven indicators at the centre level (facilitating language development, facilitating literacy development, facilitating numeracy development, facilitating prosocial behaviour, facilitating emotional development, facilitating play, facilitating engagement of parents/guardians) and two indicators at the target group level (behavioural support and adaptive practices). However, because TALIS Starting Strong measures the self-reported practices of staff from countries with different cultural backgrounds and in different settings, building these indicators entails a number of methodological issues. In particular, individual and cultural factors affect the interpretation of questions. This may produce differences in levels of endorsement or frequency in survey responses and it may also affect the item correlation structure used to summarise the information and thus limit the comparability of the resulting indicators. In order to effectively use these indicators for further analysis, it is important to consider the specific scale properties, such as their reliability and validity in cross-cultural context.

To understand whether the process quality indicators in TALIS Starting Strong could be considered comparable across countries and levels of ECEC, measurement invariance was tested. The most restrictive level of measurement invariance, *scalar invariance*, is reached once the indicator satisfies three properties:

1. The structure of the indicator is the same across groups, meaning that the indicator is built using the same set of items across groups.
2. The strength of the associations between the indicator and the items (factor loadings) are equivalent. This property makes it possible to claim that one unit of change in the indicator will lead to the same amount of average change in the items that constitute the construct across different groups
3. The intercepts/thresholds for all items across groups are equivalent. If the intercepts of the items for all groups are equivalent, then the expected value of the items becomes the same across groups when the value of the indicator is zero and means can be compared across groups.

If only properties (1) and (2) are satisfied, then the indicator reaches *metric invariance*. If only property (1) is satisfied, the indicator reaches *configural invariance*.

Indicators of process quality built for this publication did not reach scalar invariance. As a result, the means of process-quality indicators cannot be compared across countries. Process-quality indicators for settings serving children under age 3 that reached metric invariance (Table A B.1) were used in regression analyses in this publication. This means these indicators can be used for comparison within countries and comparisons across countries of the strength of the association between process-quality indicators and other factors. With metric invariant scales the same items from the Survey are relevant for each dimension of process quality across countries. Therefore, these indicators of process quality are used to describe practices within each country and to examine how characteristics of the specific group of children, the setting and the responding staff member explain variation in practices across countries.

Some indicators of process quality only reached configural invariance for settings for children under age 3 (facilitating literacy development, facilitating emotional development and behavioural support; Table A B.1). As a result, these indicators were not included in regression analysis, but individual questions that comprise them were examined separately.

Table A B.2. Indicators of process quality in TALIS Starting Strong: Levels of measurement invariance

Dimension	Indicator	Practices (items from the survey)	Level of measurement invariance
Facilitating language, literacy and numeracy development (Practices used at the centre level, according to staff)	**Facilitating language development**	Encourage children to talk to each other, Position themselves at the children's height when talking or listening, Rephrase or recite statements to make sure children have been understood, Model the correct word rather than correcting the child directly	**Metric**
	Facilitating literacy development	Play word games with the children, Play with letters with the children, Sing songs or rhymes with the children	**Configural**
	Facilitating numeracy development	Use sorting activities by shape or colour, Play number games, Sing songs about numbers, Help children to use numbers or to count, Refer to groups of objects by the size of the group	**Metric**
Facilitating socio-emotional development (Practices used at the centre level, according to staff)	**Facilitating emotional development**	Hug the children, Talk with children about feelings, Help children to talk about what makes them happy, Help children to talk about what makes them sad	**Configural**
	Facilitating prosocial behaviour	Encourage sharing among children, Encourage children to help each other, Encourage children playing in small groups to include other children, Encourage children if they comfort each other	**Metric**
	Facilitating play	If invited join in with the children's play, When staff play with children, the children are allowed to take the lead, Staff show enjoyment when joining the children's play	**Metric**
Group organisation and individual support (Practices used by staff with the target group)	**Behavioural support**	I help children to follow the rules, I calm children who are upset, When the activities begin, I ask children to quieten down, I address children's disruptive behaviour that slows down other children's learning, I help children understand the consequences if they do not follow the rules	**Configural**
	Adaptive practices	I set daily goals for the children, I explain how a new activity relates to children's lives, I give different activities to suit different children's level of development, I give different activities to suit different children's interests, I adapt my activities to differences in children's cultural background	**Metric**
Facilitating engagement of parents/guardians (Practices used at the centre level, according to staff)	**Staff engagement with parents and guardians**	Encourage children to talk to each other, Position themselves at the children's height when talking or listening, Rephrase or recite statements to make sure children have been understood, Model the correct word rather than correcting the child directly	**Metric**

By design, all indicators and dimensions have a midpoint of 10 and a standard deviation of 2. This means that indicators and dimensions with values above 12 can be considered high. The fact that all indicators and dimensions have the same midpoint helps interpret the level of implementation of a specific practice, regardless of whether the practice is expected to occur quite often in the target group (or centre) or not. Additional information on the construction and validation of the scales included in this report can be found in Chapter 11 of the *TALIS Starting Strong 2018 Technical Report* (OECD, 2019).

References

OECD (2019), *TALIS Starting Strong 2018 Technical Report*, OECD Publishing, Paris; http://www.oecd.org/education/talis/TALIS-Starting-Strong-2018-Technical-Report.pdf [1]

Annex C. List of tables available on line

The following tables are available in electronic form only:

https://doi.org/10.1787/888934148068	
Table C.4.1	Relationship between facilitating language development and centre characteristics
Table C.4.2	Relationship between facilitating numeracy development and centre characteristics
Table C.4.3	Relationship between facilitating prosocial behaviour and centre characteristics
Table C.4.4	Relationship between facilitating play and centre characteristics
Table C.4.5	Relationship between facilitating engagement of parents/guardians and centre characteristics
Table C.4.6	Relationship between use of adaptive practices and staff and centre characteristics

TALIS

Quality Early Childhood Education and Care for Children Under Age 3

RESULTS FROM THE STARTING STRONG SURVEY 2018

The experience of children under age 3 with early childhood education and care (ECEC) is crucial for their learning, development and well-being and for parents' return to work. Despite increasing recognition of the importance of ECEC for the youngest children, little is known about this sector.

The OECD Starting Strong Teaching and Learning International Survey (TALIS Starting Strong) is the first international survey that focuses on the ECEC workforce. It asks staff and leaders about themselves and their settings, including the practices they use with children and their views on the sector. This thematic report focusses on ECEC for children under age 3, an option of the Survey in which four countries (Denmark, Germany, Israel and Norway) participated. The report answers many questions that are important for parents, actors in the field, and policy makers.

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