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Universitetet i Stavanger



Empirical Research on Scandinavian Early Childhood Education and Care in 2021

Review of research and assessment

Astrid Guldbrandsen

Nina Kalvatn Friestad

May Irene Furenes Klippen



Knowledge Centre
for Education

University of Stavanger

FILIORUM Centre for Research in Early
Childhood Education and Care

University of Stavanger

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Distribution: Knowledge Centre for Education,
University of Stavanger
4036 STAVANGER

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Foreword

This report is the third in a series of reports on Scandinavian early childhood education and care research for which the Knowledge Centre for Education (KCE), in collaboration with FILIORUM (Centre for Research in Early Childhood Education and Care), has been responsible. The work has been financed by the Ministry of Education and Research (Norway), the Norwegian Directorate for Education and Training (Norway) and the Knowledge Centre for Education.

The implementation is based on the work that was established as early as 2006. We have focused on implementing this report in accordance with previous reviews and assessments in order to ensure as good a basis for comparison as possible. The NB-ECEC database, where the research is collected and made available, provides unique access to Scandinavian early childhood education and care (ECEC) research, and is an important source of insight for ECEC teachers, coordinators, ECEC student teachers and ECEC teacher educators. The database also provides important insight into research that is of importance to managers in the public and private sectors.

Thank you for entrusting us with this assignment. We would also like to thank the Scandinavian panel of experts for their contributions to the quality assurance of our work, and for the assistance received from researchers at FILIORUM and the Knowledge Centre for Education. Last but not least, we would like to extend heartfelt thanks to Astrid Guldbrandsen, who led the work on reviewing and assessing Scandinavian research for the year 2021 in close collaboration with Nina Kalvatn Friestad and May Irene Furenes Klippen.

Elaine Munthe

Managing Director

Knowledge Centre for Education

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Summary

The 2021 review shows that the number of publications relating to research into Scandinavian early childhood education and care (ECEC) continues to increase. The 2021 review includes 255 studies, of which 187 are considered to be of medium or high quality, compared to 169 of 219 included in 2020. There has been a distinct increase in high-quality studies since 2018, but we see a decline in 2021. In addition, there is an increase in the number of studies considered to be of low quality. The proportion of studies considered to be of medium quality remains relatively unchanged compared with the previous review. A total of 73% of the studies are considered to be of medium or high quality and are included in the NB-ECEC database with abstracts and subject tags.

In 2021, the included studies are distributed as follows: Sweden 122, Norway 97 and Denmark 46. The review shows that the proportion of studies published in English has increased from 2020 and that these are considered to be of increasingly higher quality compared to studies published in Swedish, Norwegian and Danish. 80% of the English-language studies are considered to be of high or medium quality, while the corresponding percentage for studies written in Scandinavian languages is 56%. The use of qualitative methods has increased somewhat from 2020 to 2021, but the percentage is still lower than in 2019. Quantitative methods constitute the same percentage of the studies as in 2020. Qualitative methods continue to clearly dominate Scandinavian ECEC research. There are also changes in the purpose of 2021 studies, where there is less of an aim to describe and more of an aim to investigate relationships or connections between variables.

With regard to research topics, there has been a marked increase in recent years in studies within the topic of *methodology*. Between 2019 to 2021, the proportion of studies with this topic has increased sixfold. Historically, the proportion of studies in this category has been relatively low. Therefore, the change in the last two years indicates an increasing research focus on ECEC methodologies. Most studies continue to focus on the topics of *teaching and learning* and *pedagogical practices*, but there has been a large decline in the latter since 2019.

Another finding in 2021 reveals an increase in the use of adults as informants, while children are used as informants to a lesser extent than previously. In the 2020 review, an increasing percentage of the studies used the youngest children as informants. We now see that the percentage of studies that use younger children (all categories under three years) as informants declined in 2021, and that the vast majority of studies involving children as informants use the oldest children.

1 Introduction

1.1 Background

This year's report presents a review of Scandinavian empirical research on ECEC for children between the ages of 0 and 6 years published in 2021. In addition to reviewing ECEC research in 2021, the report also includes a comparison with findings from 2019 and 2020 as well as historical trends for the number of studies according to country. We have also included some historical perspectives in the text to better highlight this year's findings and put them into context.

The 2021 review was conducted by the Knowledge Centre for Education at the University of Stavanger. The Knowledge Centre for Education has the mandate to conduct and disseminate systematic reviews that are relevant to the education sector as a whole. As in 2020, the research project was commissioned by the Norwegian Ministry of Education and Research and has been funded by the Ministry of Education and Research (Norway), the Norwegian Directorate for Education and Training (Norway) and the Knowledge Centre for Education.

A panel of experts consisting of ECEC researchers from Denmark, Sweden and Norway has, as in previous years, assisted in the work on assessing the included studies. One criterion regarding the composition of the panel was to ensure that it collectively encompassed a large proportion of ECEC research with regard to content, methodology and national affiliation. The expert panel for NB-ECEC is characterised by continuity from year to year, and only one member has left and been replaced with a new member since the 2020 review. In 2021, the expert panel consisted of the following researchers from each of the three countries:

- Professor Dorte Bleses, Aarhus University, Denmark
- Professor Ole Henrik Hansen, Jönköping University, Sweden (formerly Aarhus University, Denmark)
- Associate Professor Jan Thorshauge Frederiksen, University of Copenhagen, Denmark
- Professor Camilla Björklund, University of Gothenburg, Sweden
- Professor Hanna Palmér, Linnaeus University, Sweden
- Professor Pia Williams, University of Gothenburg, Sweden
- Associate Professor Liv Ingrid Aske Håberg, Volda University College, Norway (new 2021)
- Associate Professor Karianne Franck, Queen Maud University College, Norway
- Lars Guldbrandsen, researcher, Oslo Metropolitan University, Norway

In addition to the expert panel, four ECEC researchers from FILIORUM and six researchers from the Knowledge Centre for Education coded and assessed the studies included in this review. See *Appendix 1* for a complete list of names.

1.2 Purpose

The primary purpose of the series of annual reviews of Scandinavian ECEC research is to make available the content and results of empirical research into early childhood education and care. The content and results are aimed at students, educators within the ECEC field, educational consultants, researchers, policy-makers, ECEC facility owners and others with an interest in ECEC research.

The purpose of this year's review was to compile and quality-assess published research on Scandinavian ECEC for children between 0 and 6 years of age in Sweden, Norway and Denmark in 2021. The report presents an overview of methodological and thematic aspects of ECEC research in Sweden, Norway and Denmark and provides the field of practice and research with a comprehensive picture of all available research focusing on ECEC facilities/providers in the Scandinavian countries. For 2021, the assignment involves assessing any changes compared to the two previous years (2019 and 2020), as well as providing a historical overview of previous reviews where relevant. In addition to conducting the actual review, the Knowledge Centre for Education has also been responsible for writing brief summaries in Norwegian of all included studies considered to be of medium or high quality and translating these into English. As in previous years, the included studies that are assessed to be of medium and high quality will be made openly available with Norwegian and English summaries in the [Nordic Base of Early Childhood Education and Care, NB-ECEC](#).

The NB-ECEC database is a result of a collaboration between the Danish Evaluation Institute (EVA), the Swedish National Agency for Education and the Norwegian Directorate of Education and Training, which started in 2006. The database enables users to search for empirical Scandinavian ECEC research and identify studies that are considered to be of medium and high quality, organised within predefined categories. The studies are presented with short summaries in Norwegian and English. The database also provides access to reports summarising research findings from the Scandinavian countries, year by year, since 2006. The reports contain figures, tables and the assessments of trends in Scandinavian ECEC research. As a result, the database is a key platform of knowledge for ECEC student teachers, ECEC teachers and coordinators, teacher educators, researchers and decision-makers at municipal and national levels. The NB-ECEC database is managed and maintained by the Danish Evaluation Institute (EVA).

2 The methodological basis of the review

In this chapter, the methodological guidelines applied during the preparation of the 2021 review will be described. The purpose of this chapter is to explain the various phases and methods used, with the aim of providing transparency and strengthening the credibility of the findings.

The review consists of the following phases: 1) systematic searches in relevant databases and manual searches in journals from 2021, 2) screening of titles and summaries (abstracts), as well as a screening of the full text for the purpose of identifying relevant studies, 3) coding and quality assessment of the studies and 4) analyses and reporting.

2.1 Literature search

The review of Scandinavian empirical ECEC research published in 2021 is based on a systematic search of databases and educational journals relevant to Scandinavian ECEC research.

For 2021, searches have been conducted in the Scandinavian databases NORA (Norway), ORIA (Norway), Idunn (Norway), Libris (Sweden), DIVA (Sweden), SwePub (Sweden) and Bibliotek.dk (Denmark). The DIVA database encountered technical problems, so searches there were limited to only Scandinavian search terms and a separate targeted search for monographs and reports in English. As in previous years, literature searches have also been conducted via the international databases ERIC, Scopus and Web of Science.

Appendix 3 provides a complete overview of the databases and journals that have been searched and the number of hits in these.

2.2 Inclusion and exclusion criteria

When working on systematic reviews, it is common to decide which types of studies to include or exclude before conducting searches. The inclusion and exclusion criteria for publications included in this systematic review are essentially the same as those used in previous years:

Research: *Research* refers to the reporting of research and systematic knowledge production that contains, as a minimum, a research question or defined field of research, a methods section and a conclusion. The research must also relate to existing theoretical or empirical research. As with reviews conducted in previous years, only educational and social sciences research relating to early childhood education and care has been included. This means that research relating to natural science and health science issues are not included in the review, even if such research deals with data generated in connection with ECEC. PhD theses published as publicly available monographs are included. Article-based PhD theses are not included, as articles from these will be included in the year of their publication. Lower degree studies, such as bachelor's, master's and graduate level, as well as licentiate theses, are not included in this review. Popular science presentations, textbooks, policy documents, anthologies, evaluations, experiment and development work, as well as research with a focus on the development of trials and methodologies, are also not included.

Publication year: The study must be published within the calendar year of the investigated review. This means that in principle, the included studies must be published in an edition that is published in the 2021 calendar year. We now see several cases where the same article appears with two different publication years: one year for the first publication of the article by the publisher (often referred to as *pre-print*, *e-pub ahead of print*, *in-press* etc.), and then another year for when the

article is published in an issue. In this year's review, we have included articles that have the year 2021, either as the issue year or as the only year provided. The latter applies to articles that were not yet in an issue at the time when they were distributed for coding, and therefore only have the year 2021 as the year for pre-print, in-press or similar.

Country: Studies must deal with ECEC in Scandinavia. Scandinavian refers to studies based on data from research into ECEC in Denmark, Sweden or Norway. Studies must, as a minimum, process data from one or more of the Scandinavian countries. Studies that report data from other OECD countries are also included, as long as they also report data from one of the Scandinavian countries.

Target group: The study must directly address the purpose of and activities relating to content, working methods, people, the environment in or relevant aspects (such as teacher training, professional development) of early childhood education and care as an institution. This means that the study is aimed at ECEC as a public or private institution that provides a service to children between the ages of 0 and 6 years. Studies conducted in early childhood education settings involving children of this age group, but that do not directly relate to early childhood education, will be excluded. For example, a study on the vocabulary of four-year-olds that does not relate to the practice of early childhood education (independent of early childhood education as the context of language development) will be excluded. From a Danish context, we include daycare, nurseries, kindergartens and integrated institutions. From a Norwegian context, we include kindergartens, open kindergartens and family kindergartens, while we include pre-schools, educational care and open pre-schools from a Swedish context. Previously, studies from Swedish pre-school classes have been included in the review. This year, however, we have decided that since pre-school classes became compulsory from 2018 and are now part of the educational activities in Swedish primary and lower secondary school, these studies will no longer be included in this ECEC review. Institutions with a particular academic or content-related profile, such as nature ECEC facilities and sports ECEC facilities, have been included because they are governed by the ECEC legislation of the countries in question. Studies that focus on the transition between ECEC and school, and that have a special focus on early childhood education as an institution, are also included.

Subject/topic: The study must have a research question that is aimed explicitly at aspects of relevance to early childhood education and care. Studies that deal with children, parents and/or educational perspectives have been included. We also include studies that focus on the perspectives of other actors, such as local authorities or government perspectives on early childhood education and care. Only educational and social sciences research relating to early ECEC has been included. Studies that present the topic, data collection and results relating to ECEC in an institutional framework have been included. Furthermore, we also include studies addressing the transition between ECEC and school if the study relates to ECEC. Studies aimed at increasing knowledge about children, parents or educators, management aspects, financial or societal aspects relating to ECEC have also been included.

2.3 Screening

We have used EPPI-Reviewer Web v.6 software in our work on screening, coding and reporting. The software was developed by the Evidence for Policy and Practice Information and Coordinating Centre (EPPI Centre) at the Social Research Institute, University College London (UCL).

All 2437 studies identified through systematic searches in Scandinavian and international databases and journals have been read by two researchers who have assessed each study independently of one another. Firstly, two researchers screened the title and abstract in order to exclude any studies that did not meet the inclusion criteria. The articles were subsequently screened in full text. Studies

that did not meet the inclusion criteria were excluded. Disagreements relating to the exclusion of studies in both screening phases were discussed by the two researchers to reach a joint decision. After the screening process had been completed, the Scandinavian panel of experts had the opportunity to review all included studies and propose research publications that were not identified through the search strategy. A further two articles from 2021 were thereby included for further data extraction and assessment. See *Appendix 4* for a summary of the search and screening phase, as well as the review of relevant studies. See also *Appendix 5* for a comprehensive overview of the reasons for excluding studies.

2.4 Coding and assessment of quality

A total of 255 studies dealing with Scandinavian empirical ECEC research were included for 2021. These were coded and quality assessed by two independent researchers. The coding scheme includes both general and more subject-specific questions. The general questions relate to matters such as the geographical origin of the studies, as well as the language, research design and methodology. The subject-specific questions apply to data relating to the study content, such as the purpose and topic of the study, as well as various aspects associated with ECEC for 0–6-year-olds in Denmark, Sweden and Norway. The scheme is structured into three sections and the questions were answered using pre-defined response categories, where respondents could elaborate using free text boxes under each question.

The coding scheme used in previous reviews has been changed for 2021 within certain categories. The reasons for the changes include the addition of categories that reflect the current Scandinavian ECEC context, making the coding scheme more clear and avoiding misinterpretations, as well as incorporating categories we believe are important for quality assessments of the included studies. Among other things, a new code has been added about the types of ECEC institutions the studies have researched (such as *family kindergarten*, *mobile kindergarten*, *nature kindergarten*), because there are currently several such profile kindergartens. A review of topics in the category *other* for the years 2018, 2019 and 2020 identified topics such as *parental collaboration*, *sustainability* and *ethnic minorities*. These have now been added, in addition to some other relevant topics. Some categories/questions have also been changed from separate yes/no questions in the coding scheme to be incorporated as categories under *topics*. Important quality assessments that have been rephrased/added include whether the studies discuss possible limitations of the study and whether they address the scope or implications of validity.

All changes to the coding scheme have been made in collaboration between researchers at the Knowledge Centre for Education and the external panel of experts and approved by the Norwegian Directorate for Education and Training and the Danish Evaluation Institute (EVA). An updated coding scheme and a memorandum describing all changes made can be found on the NB-ECEC website www.nb-ecec.org.

In order to maintain impartiality, all researchers at the Knowledge Centre for Education/FILIORUM and the panel of experts were asked to declare any conflicts of interest. Studies were randomly assigned to all researchers, with the exception of cases for which a conflict of interest had been declared (as these were not assigned to researchers that were disqualified, but randomly assigned to another researcher) or in cases where the researcher did not have sufficient Scandinavian language proficiency and was therefore assigned articles in English only.

Based on a comprehensive assessment of research quality, each study was assessed as either high, medium or low quality. The criteria for achieving high or medium quality is based on whether the study reports using sufficient transparency related to data collection methods, analysis methods

and the description of the sample and recruitment. This therefore constitutes an assessment of transparency and whether researchers are able to answer the research questions as described through the study to form the basis for the assessment of research quality. The quality of the study is thus reflected through a comprehensive and systematic assessment of the extent to which they meet general scientific standards for empirical research. The quality of the studies has been assessed exclusively on the basis of what is presented in the publication itself. This means that the assessment is based on how the study is presented. More information on the criteria for assessing quality can be found by studying the coding scheme and its guidance document, which are available on the NB-ECEC website. Studies assessed as medium or high quality report in a credible, sufficiently clear and distinct manner and are included in the Nordic Base of Early Childhood Education and Care (NB-ECEC) for the year 2021.

As mentioned, the quality assessments were conducted by two independent researchers. One of these was an internal researcher from FILIORUM/the Knowledge Centre for Education and the other was from the panel of experts. In the case of disagreements between the researchers, the assessment made by the researcher from the expert panel was used as the final assessment if the disagreement related to whether the research was of medium or high quality. If, on the other hand, there was disagreement as to whether a study was of low quality, a third researcher, and in some cases a fourth, was asked to reassess. This was done to ensure that all studies of medium and high quality were included in the database.

To ensure reliability in the assessment of the studies, all researchers without experience from previous years received training in coding and quality assessments of research literature. Meetings were also convened at which researchers had the opportunity to discuss relevant matters relating to quality assessments. A chat function was also created using Teams (individually for the two groups to ensure that the assessments were independent) via which questions could be raised throughout the assessment process. The purpose of the meetings and the chat function was so that relevant questions relating to coding and data extraction could be raised in order to enhance the quality of the assessment process.

Summaries have been written for all studies assessed as having a medium or high research quality. The summaries for these studies have been published in the Nordic Base of Early Childhood Education and Care (NB-ECEC).¹ It is not possible to identify which studies have been assessed as having high or medium research quality using the database.

¹ <https://www.nb-ecec.org/no/sok-i-forskningsstudier>

3 ECEC Research in 2021

This chapter gives an account of and analyses the most important trends in all the 255 included studies representing the Scandinavian empirical ECEC research we have identified for 2021. Furthermore, we compare any changes with the figures from 2019, 2020 and previous years' reports with regard to the number of studies according to country. As in previous years, we will report on the number of publications according to country, publication language, research design and methods used. Furthermore, we will present the topics that are investigated in the Scandinavian ECEC research, as well as the actors who inform or are the study subjects in the studies. Finally, the report will provide an overview of the quality assessment in relation to the type of publication, method, publication language, country and purpose of the study (*appendices 6-9*).

3.1 Included studies and distribution according to country, language and funding

Figure 1 shows the total number of studies included in the review for 2021, as well as the total number in 2019 and 2020. We see from the figure that the number of studies continues to increase, from 204 in 2019 to 219 in 2020, and further to 255 in 2021 (see also the reports of Bondebjerg et al. (2018), Bondebjerg et al. (2019), Furenes et al. (2022) and Guldbrandsen et al. (2023)). The number of included studies in 2021 is the highest figure since the NB-ECEC reviews began in 2006.

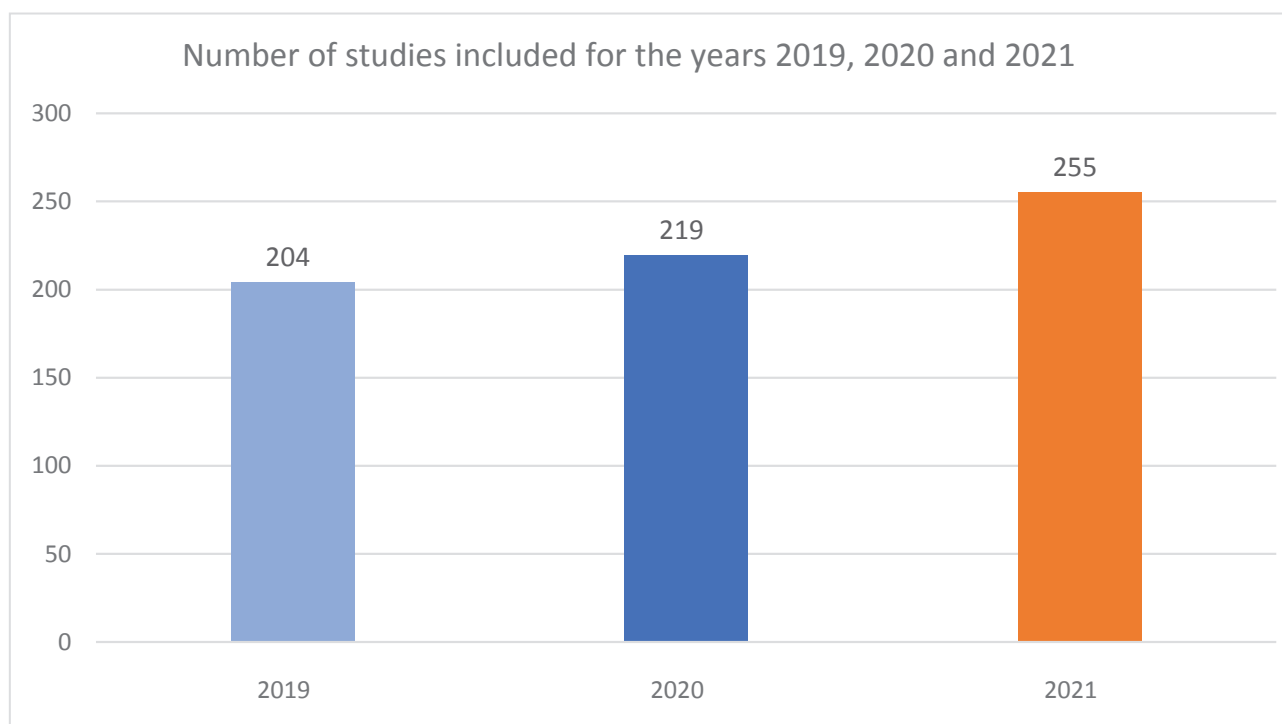


Figure 1. The number of studies included for the years 2019, 2020 and 2021.

One explanation for the increases in recent years may be that from 2018, literature searches were conducted in several international databases. We have used the same search strategy for 2021, and thus the increase may indicate a general growth in ECEC research activity. The increase may be related to more ECEC research funding due to increased interest from politicians regarding the quality and content of ECEC and an increasing focus on knowledge-based policy and practice. Figure 2 shows stated sources of funding for the studies from 2019–2021. We see from the figure that there has been a relatively large increase in the number of studies (from 50 to 70) that report

funding from research councils/foundations since 2019, as well as an increase in the number of studies that do not state their source of funding.

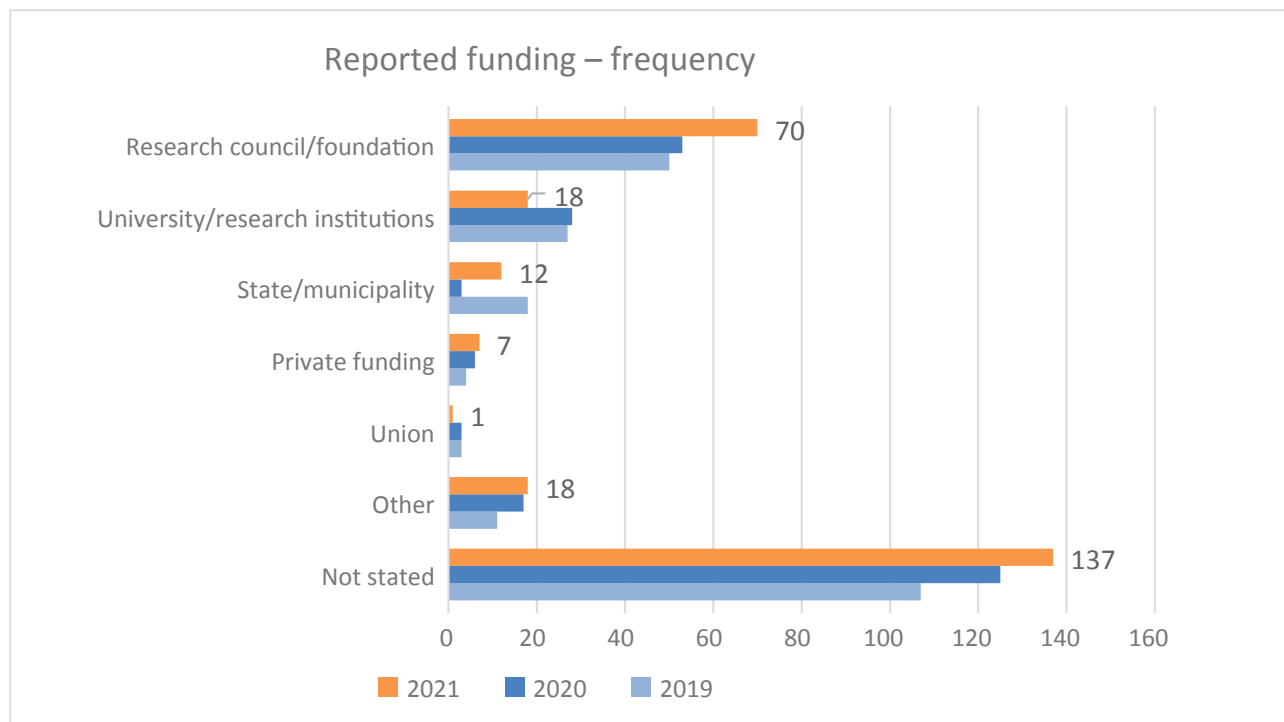


Figure 2. Source of funding stated in the studies, from 2019–2021. It is possible to register multiple sources of funding for a single study. The percentage for 2021 is shown on the data label.

Figure 3 provides an overview of number of studies conducted in the different countries during 2021. Sweden is the country publishing the most studies (122), followed by Norway (97) and Denmark (46). Developments over the past three years (Figure 4) show an increase in the number of published studies for all three Scandinavian countries, where Norway and Sweden show the largest increase.

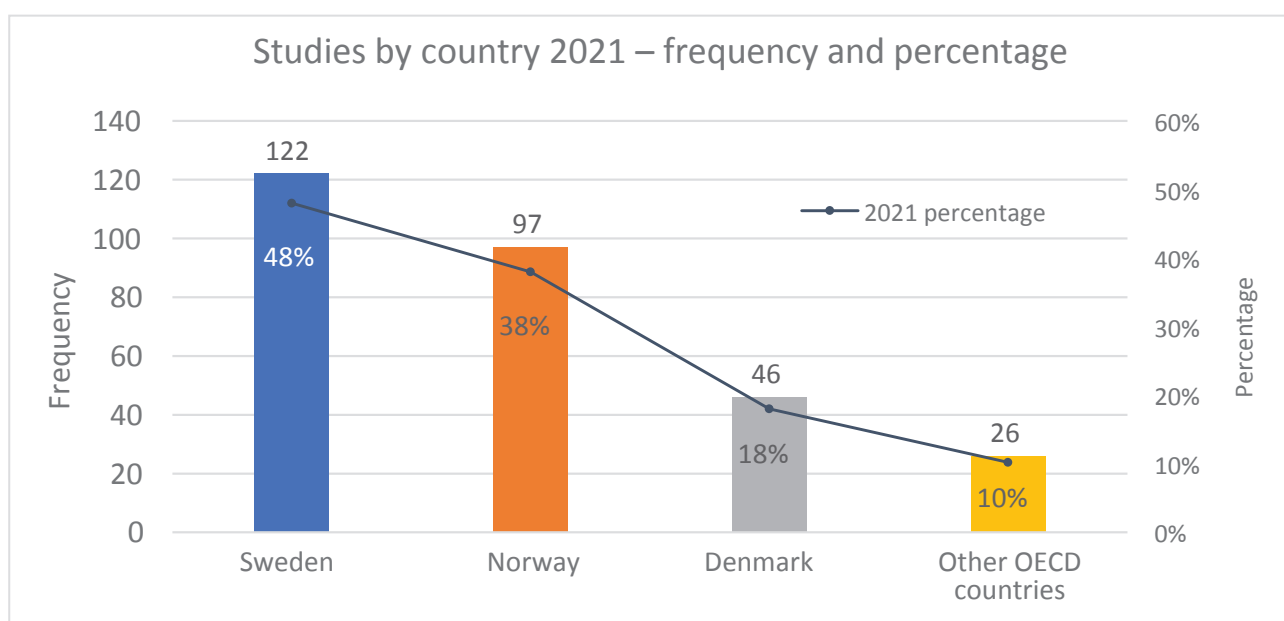
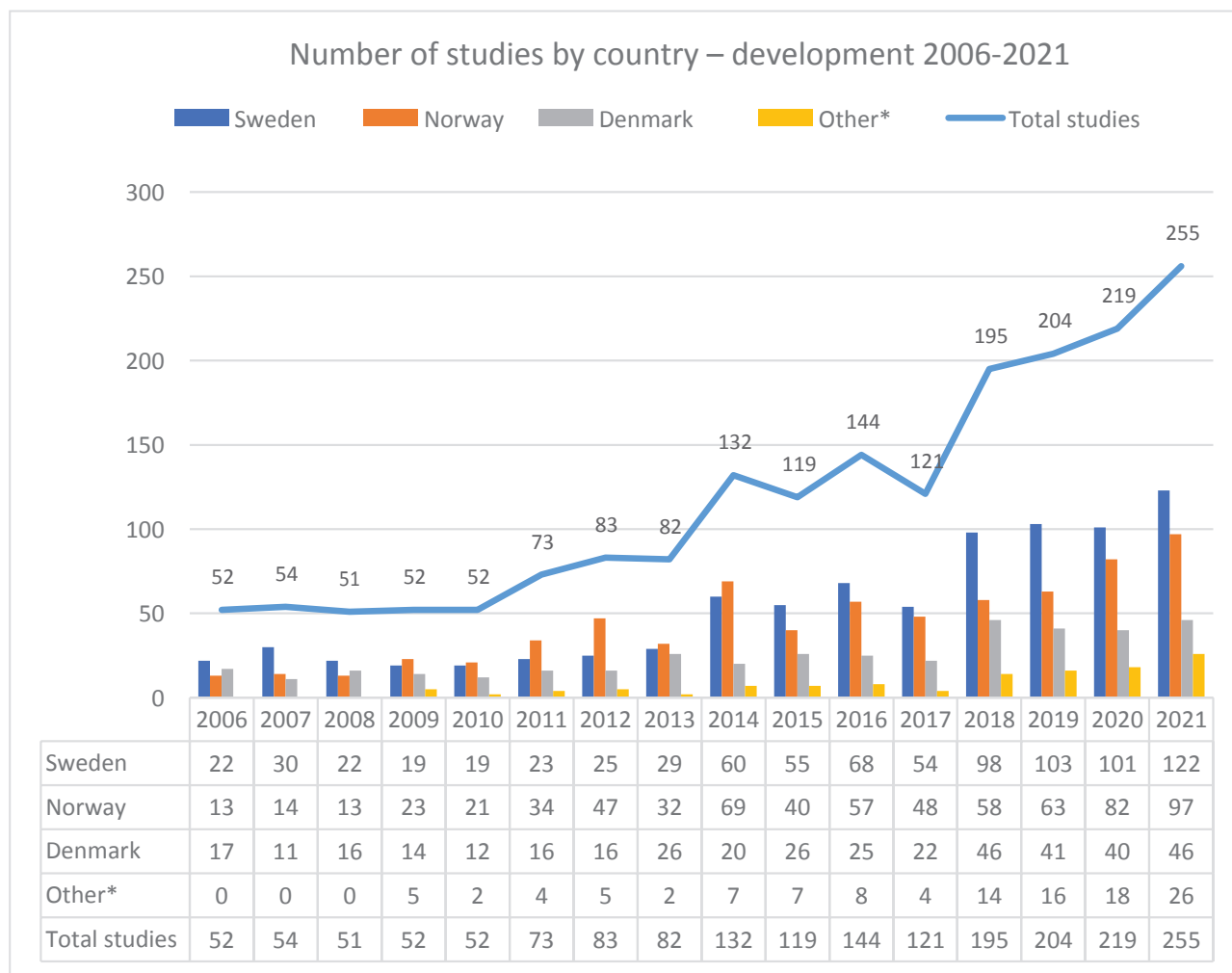


Figure 3. Countries where the studies were conducted in 2021 are shown using columns for numbers (left axis) and dotted lines for percentages (right axis). It is possible to register multiple countries for a single study.

Figure 4 shows the development in the number of publications according to country from 2006 to 2021, as well as the total number of included studies year by year.



*Other OECD countries.

Figure 4. Number of studies according to country in which the studies were conducted from 2006–2021. The blue line shows the total number of included studies for each year. It is possible to register multiple countries for a single study.

The percentage of Danish publications has varied between 15% and 33% and was 18% in 2021, the same as in 2020. By comparison, Sweden contributed 48% of the included studies for 2021 and 46% in 2020, while the figure for Norway has increased from 37% to 38%. In recent years, Norway has increased its contribution from 31% in 2019 to 38% in 2021, but we see from Figure 4 that historically there have been large fluctuations from year to year. The percentage of studies including ECEC research in other countries remains low, but is increasing.

Figure 5 shows the distribution of studies according to publication language.

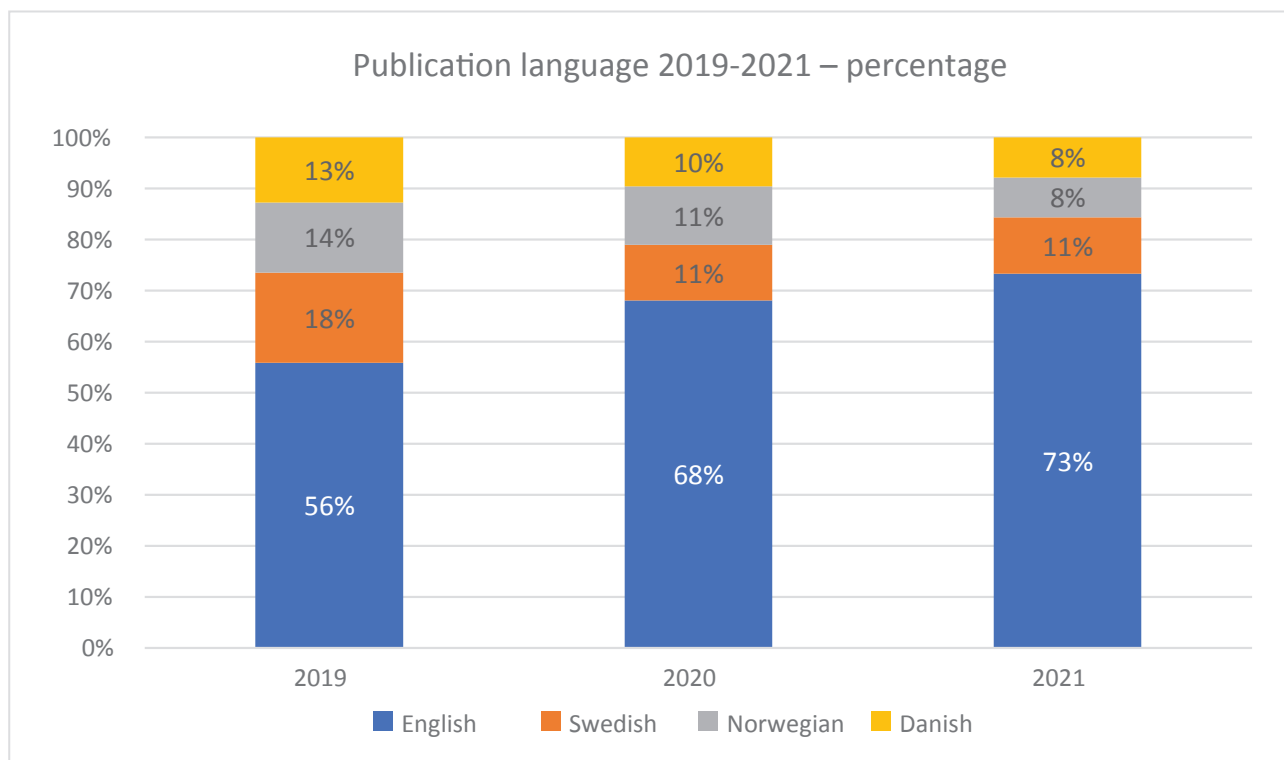
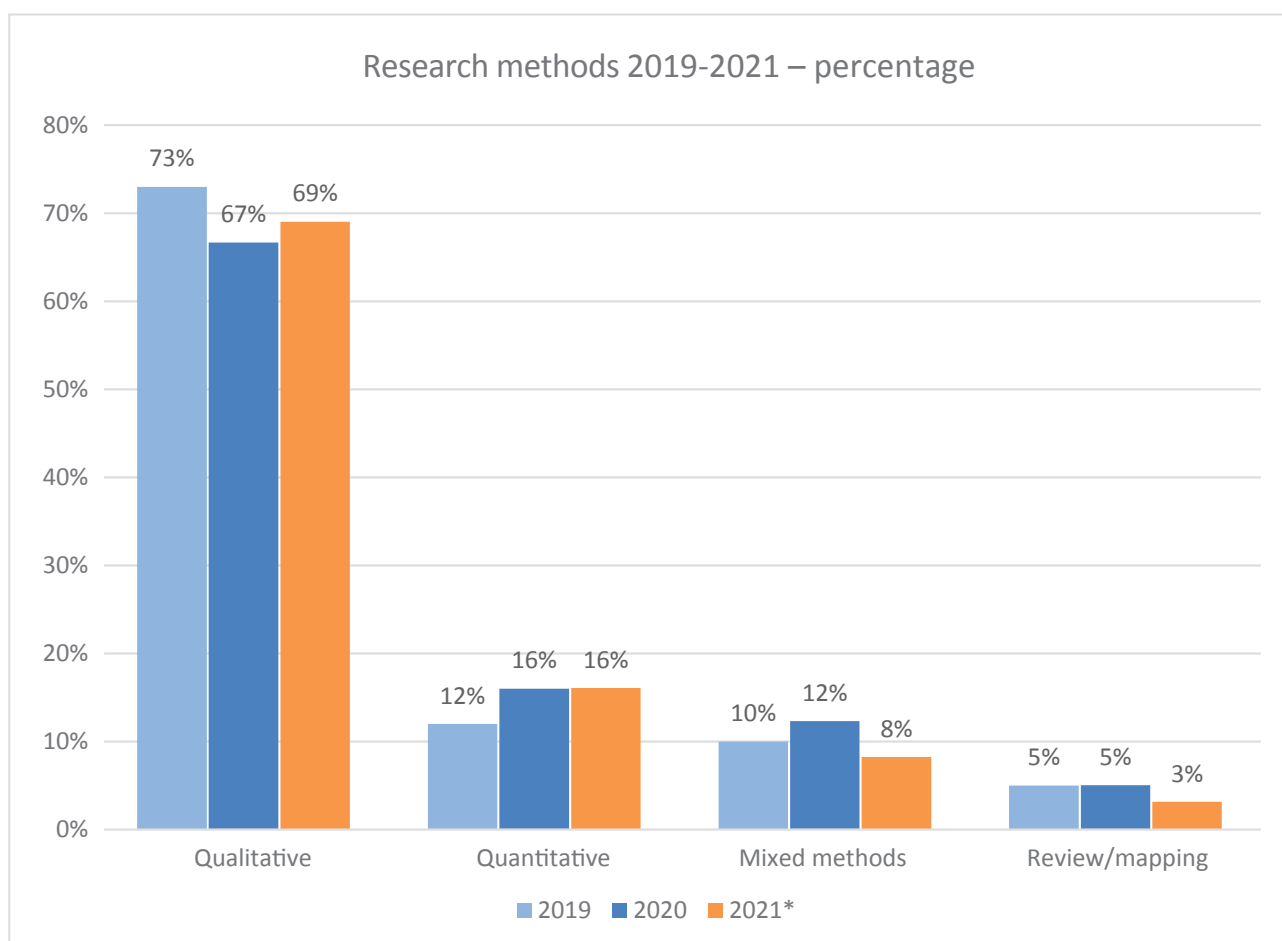


Figure 5. Publication language in 2019, 2020 and 2021.

The figure shows that in 2019 and 2020, respectively, 56% and 68% of the included studies were written in English, while the latest review (2021) shows that this figure has risen to 73%. Furthermore, the publication languages for 2021 are evenly distributed between Swedish (11%), Norwegian (8%) and Danish (8%). Compared to the two previous years (2019 and 2020), we now see a further reduction in articles in Norwegian and Danish (down from 14% to 11% and from 13% to 11% in 2019 to 2020, respectively). The percentage of articles written in Swedish is 11%, the same as in 2020. The percentage of publications in English thus continues to increase in 2021. This is evidence of a clear trend. A look back at the reviews of Scandinavian ECEC research that started in 2006 shows that most of the studies were initially published in a Scandinavian language. From 2006 until 2021, studies published in English have increasingly been used to disseminate Scandinavian ECEC research (see Figure 2 in Furenes et al. (2022)). The increase may be due to various reasons and may also be related to the fact that searches using English search strings were conducted in several international databases after 2017.

3.2 Applied research methods

Figure 6 shows the various research methods used in the included studies for 2019, 2020 and 2021.



*For 2021, 4% of the studies did not state a method.

Figure 6. Research methods for 2019, 2020 and 2021. Only one response was provided for each study.

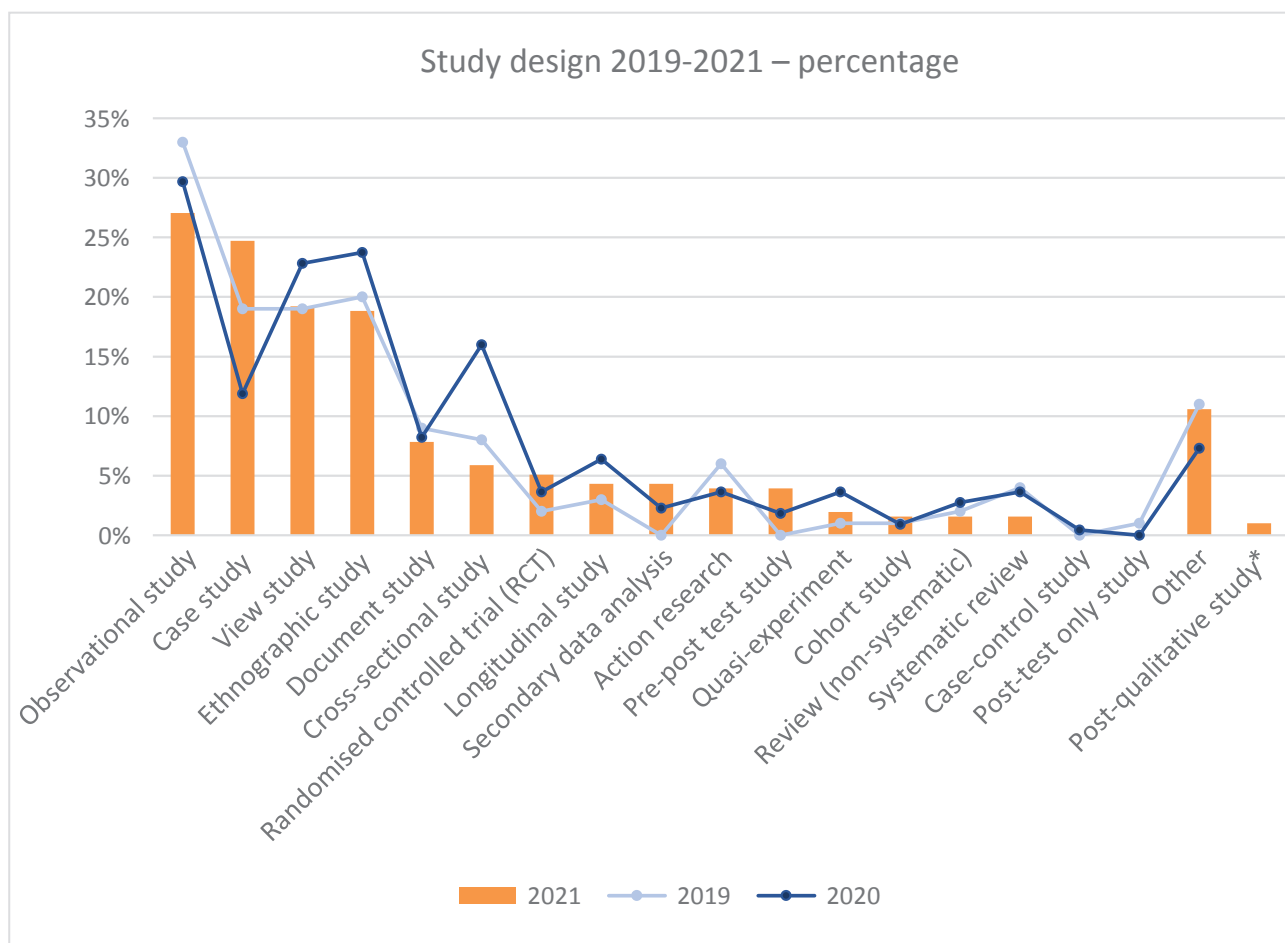
In 2021, qualitative methods are still by far the most widely used research method in Scandinavian ECEC research, as reported in previous years' reviews. In 2020, we saw a decline in the use of qualitative methods, but not in 2021, where there is a slight increase in the percentage of qualitative studies, from 67% to 69%. The percentage of studies using a quantitative method remains at the same level as in 2020 (16%). Studies reporting mixed methodology decreased from 10% in 2019 to 8% in 2021, and reviews/research mappings decreased from 5% in 2019 to 3% in 2021. New this year is that several studies (9) do not state research methods, which has not been the case in previous reviews.

3.3 Study design

Figure 7 shows the study designs used in the included studies for 2021. Most studies (27%) use observation as a study design, followed by *case studies* (25%), *view studies and ethnographic studies* (both 19%). *Observational studies* have been the most commonly used study design over the past three years. Furthermore, we see the percentage of *case studies* increasing in 2021 after showing a decline in 2020 (from 12% in 2020 to 25% in 2021). At the same time, there are significantly fewer *cross-sectional studies* in 2021 compared to 2020 (down from 16% to 6%). Therefore, both *case studies* and *cross-sectional studies* show a converse tendency for 2020 compared to

2021, when the number of *case studies* decreased and the number of *cross-sectional studies* increased. These fluctuations from year to year make it difficult to state anything concrete about trends in the material. We also see an increasing trend regarding studies using secondary data analyses and pre-post testing over the past two years, although the percentage is still relatively low for both. As for the other study designs, we see only minor changes in the last two years.

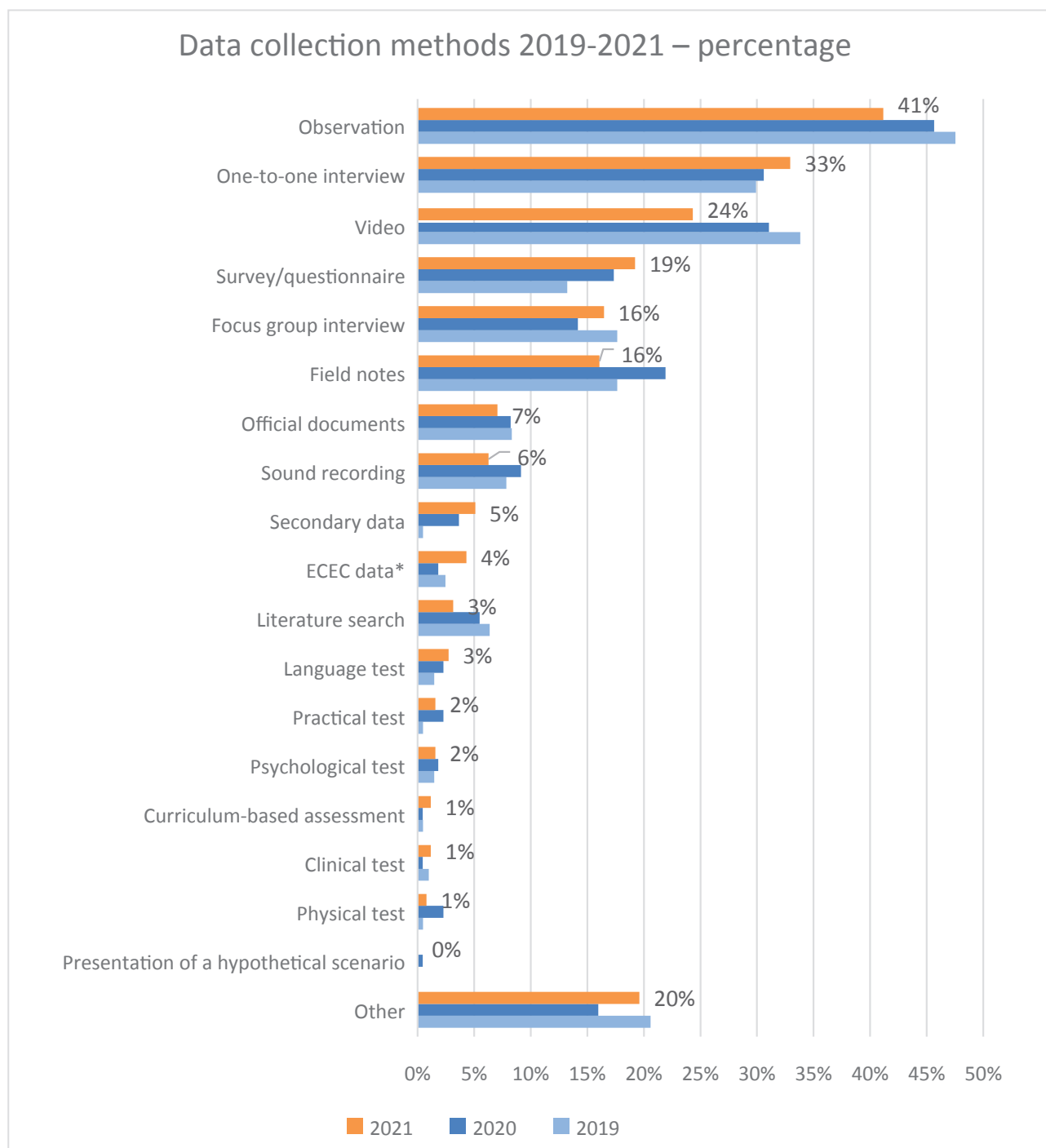
The *other* category (11% in 2021) includes studies with a design that does not fit into any of the other categories. In 2021, we find studies here that are referred to as comparative studies and design-based studies, in addition to so-called art-based research and research circles. For several of the studies, it has also been unclear which design was used. It is also worth mentioning that post-qualitative studies were included as study designs in the coding scheme for the 2021 studies. 1% of the included studies used a post-qualitative design this year.



*New category from 2021

Figure 7. Applied study design for 2021. It is possible to register several designs per study. 2021 is shown with orange columns, while 2019 and 2020 data are shown as light blue and blue lines, respectively.

Figure 8 shows reported data collection methods for the included studies.



*Meeting minutes, calendar etc.

Figure 8: Registered data collection methods for the years 2019, 2020 and 2021 in percentage. The percentage for 2021 is shown on the data label. It is possible to register multiple data collection methods for a single study.

Figure 8 shows that most studies continue to report using *observation* as the data collection method. Although there is a slight increase in the *number* of studies using observation for 2021, the *percentage* has nevertheless decreased slightly compared to the previous two years (48% in 2019, 46% in 2020 and 41% in 2021). The percentage of studies using observation fluctuates from year to year, but is lower in 2021 than all registered years since 2009. Furthermore, *one-to-one interviews* and *video* remain the second and third most commonly used methods for data collection,

but there are some changes here. While *one-to-one interviews* have slightly increased in 2021 compared to the previous two years (up from 30% in 2019 to 33% in 2021), a smaller percentage of 2021 studies now use video observation (down from 34% in 2019 to 24% in 2021). In addition, there is an increase in 2021 for the fourth most used data collection method *questionnaire* (up from 13% in 2019 to 19% in 2021). *Field notes* and *focus group interviews* are both used in 16% of the studies. There are fluctuations here and no clear developments in recent years. The other categories for data collection were all used in less than 10% of the studies and only show small changes. For 2021, as in the previous two years, there are few studies that use different forms of tests (*language, clinical, physical, practical or psychological*). There is also an increase in the use of *secondary data* in ECEC research (from 0.5% in 2019 to 5% in 2021). A quarter of the studies fall under the *other* category. Several of these studies use data collection methods such as unspecified interviews, photos, drawings and workshops. The *other* category has increased by 4 percentage points from 2020.

3.4 The purpose and content of the research

The purpose of the studies has been coded using four categories: descriptive, exploration of relationships, effect studies or studies of interventions ('what works') and mapping/synthesizing research. The studies are further categorised according to the various topics they cover. Since one study may touch on several topics, multiple topics are often registered for each study.

Purpose

Figure 9 provides an overview of study purposes in 2019, 2020 and 2021.

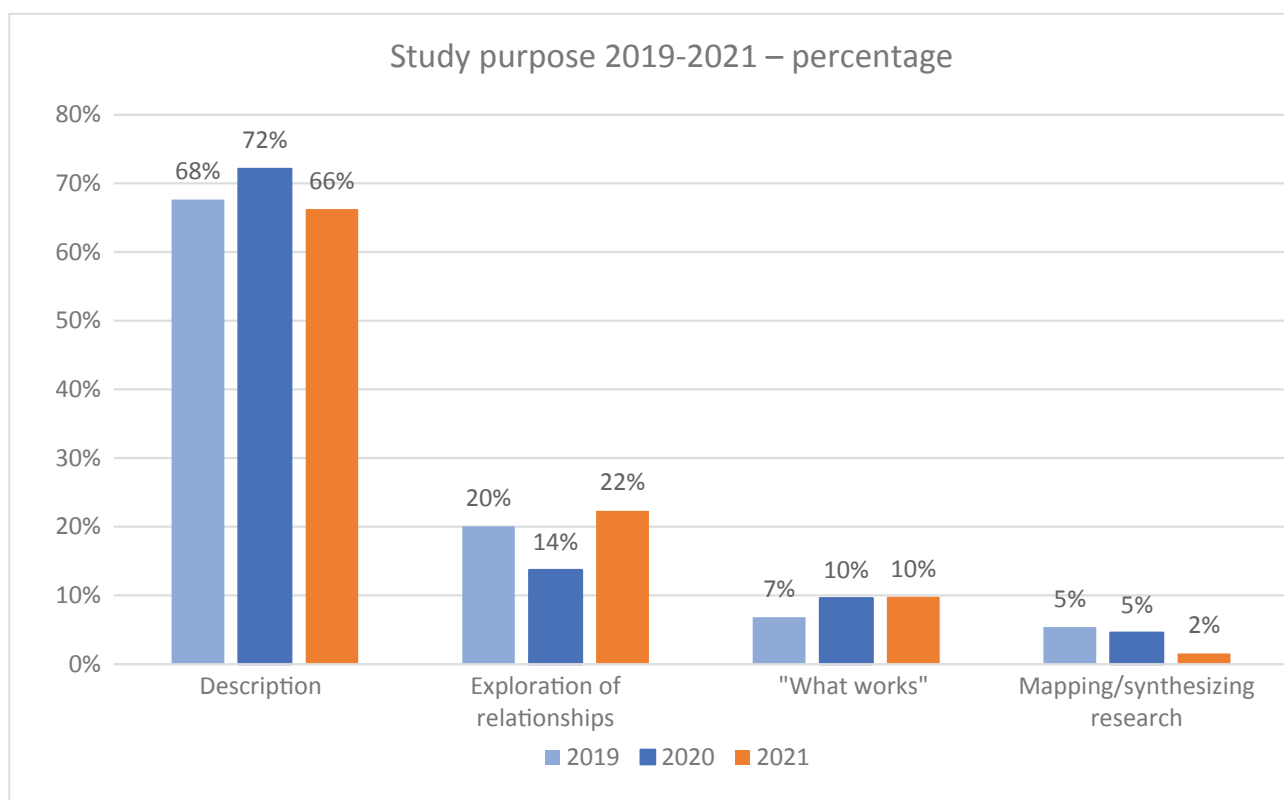


Figure 9: Study purposes for 2019, 2020 and 2021. It is only possible to provide one response for a single study.

In 2021, we see that a clear majority of the studies still have the purpose of *describing* phenomena, with a total of 158 studies (66% of the total number of included studies). One example of such a descriptive study is a study that investigates how ECEC staff detect and assess young children's

need for support in motor development. Since 2006, most included studies have been descriptive. However, in 2021, we observed a decline in the number of such studies, with a reduction of 2 and 6 percentage points respectively compared to 2019 and 2020. Although the percentage of studies describing phenomena in the ECEC varies from year to year, data from the last three years indicate a tendency towards a decreasing percentage of studies that aims to describe.

In 2021, 30 (22%) of the included studies had the purpose of *exploring relationships* between variables. This is an increase from the previous years, where we see that the proportion was 20% and 14% for 2019 and 2020 respectively. An example of this type of study is a study that investigates the relationship between the physical activity of ECEC staff and children.

The purpose of 20 (10%) of the studies in 2021 was to look at 'what works'. This type of study investigates cause-and-effect relationships/causality and typically looks at the effect of interventions. An example of this is a study that explores how a reading and writing intervention in ECEC affects reading performance in Year 2 school classes. The percentage of 2021 studies with the purpose of 'what works' is at the same level as in 2020. This represents a slight increase compared to 2019, when the proportion was 7%. Furthermore, the percentage of studies evaluating the effect of interventions in 2021 is the highest recorded since 2013 (Figure 5 in Furenes et al. (2022)).

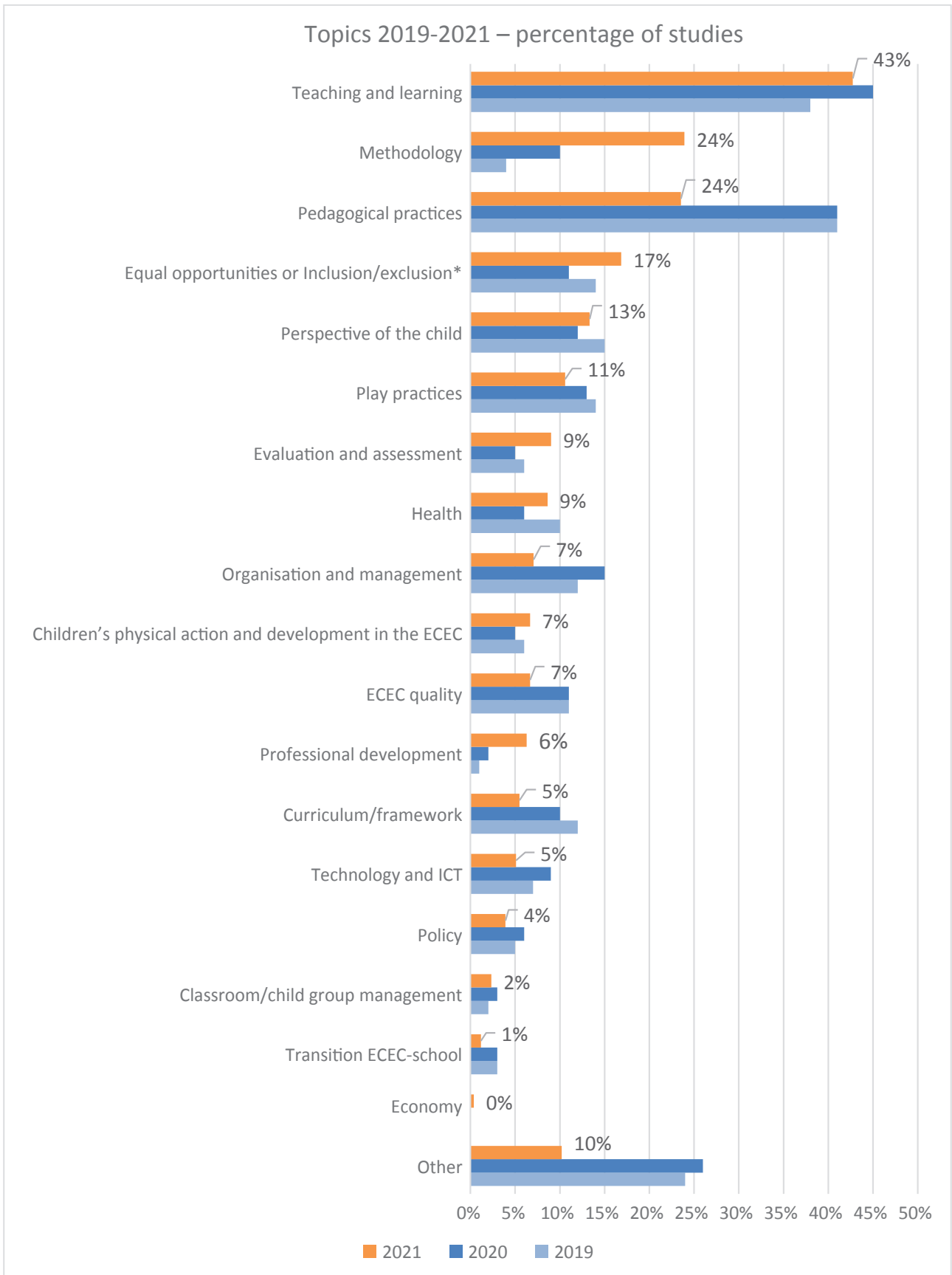
The category with the fewest studies is *mapping/synthesizing research*, and is used in reviews, where we see that it was 5% in 2019, 5% in 2020 and 2% in 2021. Reviews represent so-called secondary research that reviews and/or synthesises the results of previously published research on a given topic, issue or research question. One example is a systematic review that summarises research on inclusion interventions for children with minority backgrounds in ECEC. With an increasing focus on summarised research and knowledge-based policy within education policy, it is somewhat surprising that the percentage of reviews published in scientific journals is still so low in Scandinavian ECEC research. However, we see that the percentage of reviews within the category of data collection methods is somewhat higher (3%). This suggests that there may be reviews that have been coded for a purpose other than to review/map/synthesize research within this category. This may be because they are coded based on the overall goal of the study, which may be to describe, explore relationships or to look at what works. Nevertheless, there is a very limited number of reviews within Scandinavian ECEC research in 2021. It should be noted that reviews may also be published in the form of reports on websites or platforms not covered by the searches in this review.

Topic

Figure 10 provides an overview of the topics explored by the studies. Seeing as a study can cover multiple topics, it is possible to report multiple topics for a single study. As described in the methods section, this year we have added some new topic categories. The new topic categories are presented in a separate figure (Figure 11), because they have no reporting history, with the percentage of studies that have explored each topic in 2021. All changes to the coding scheme made for 2021, including the new categories and minor changes to existing categories, are posted as a memorandum on the NB-ECEC website.

Most studies still focus on the topic of *teaching and learning* (43%), but there is a slight decrease of 2 percentage points in this category from 2020 to 2021. However, we see major changes within the categories of *pedagogical practices*, *methodology* (methodology in ECEC, not research methods) and *organization and management*. There has been a large increase in recent years in studies within the topic of *methodology*: since 2019, the percentage of studies has risen from 4% to 24%, a sixfold increase. Historically (since 2006), the percentage of studies in this category has ranged between 0–10%. The change we have seen in the last two years therefore indicates a strong increase in focus on methodology in ECEC research. At the same time, the categories of *pedagogical practices* and *organisation and management* have seen a large decrease from 2020 to 2021, 17 and 8 percentage points, respectively. *Pedagogical practices* was introduced as a category in 2013 and has remained consistently high as one of the most studied topics since 2014 (between 34% and 59%). Therefore, the sharp decrease is surprising. If we look at the decrease in this category in conjunction with the increase in *methodology*, it is conceivable that this is due to challenges in distinguishing between these two categories. It is possible that the understanding of the categories may vary, and that the codes may overlap. At the same time, the expert panel and reviewer 1 group are characterised by a high degree of continuity and experienced encoders in the project. Therefore, although possible, it is less likely that this is the main cause of the significant change we are now observing. The topic category of *organization and management*, which has also experienced a decrease in 2021, has fairly large variations since 2006 (Figure 6 in Furenes et al. (2022)), with a percentage ranging between 9% and 20%. The 7 percent registered in 2021 is half that of 2020, and historically it is the lowest percentage observed for this category. It is worth noting in 2021 that ECEC research focuses more on topics other than organisation and management. In 2021, we also see a decrease in the categories of *ECEC quality*, *curriculum/framework*, *technology* and *ICT*, and a decrease in *play practices*, *policy* and *transition from ECEC to school*, although these categories constitute small percentages. At the same time, we see some increase in studies on professional development, but the numbers are also small for these categories, and thus vulnerable to random fluctuations. There is still 0% of studies (1 study in 2021) focusing on *economy*.

The category *other topics* has also seen a significant decrease this year from 26% in 2020 to 10% in 2021, which is likely related to the introduction of the new categories in 2021. In 2021, the *other* category includes topics such as art, friendship, belonging, shame, democracy, diversity, gender, touch, mobility practices, food/meals, and guidance.



*Inclusion/exclusion added in 2021.

Figure 10: Study topics for 2019, 2020 and 2021. The percentage for 2021 is shown on the data label. It is possible to provide multiple responses for a single study.

Figure 11 shows the new topics coded for the 2021 studies. *Well-being, parental cooperation, ethnic minorities* and *sustainability* are topics in several of the studies in 2021. Since the topics are categorised for the first time for the 2021 studies, we are unable to compare with previous years.

Figure 12 provides an overview of topics that fell within other categories in the coding scheme in the years prior to the 2021 review. Both *communication/relation, values/ethics* and *physical environment* in ECEC are topics that are explored in several studies, 17%, 11% and 7% respectively. One reason for the decrease in several of the 'older' categories may be that these used to accommodate the new/moved categories for 2021.

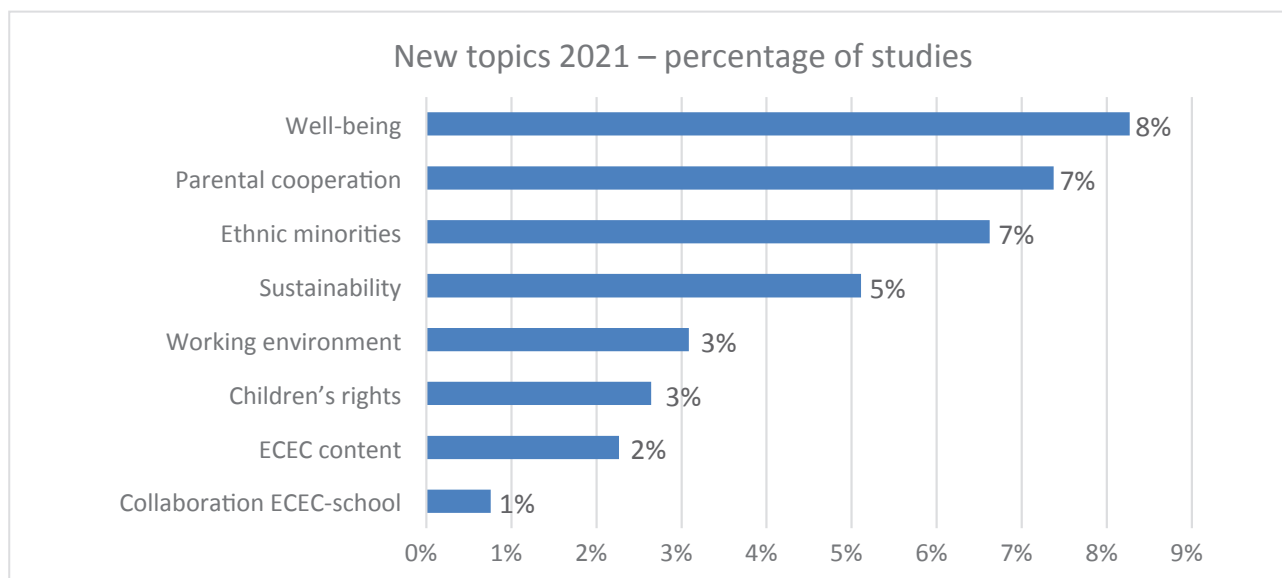


Figure 11: New topics added in 2021 and percentage of studies that have researched these topics. It is possible to provide multiple responses for a single study.

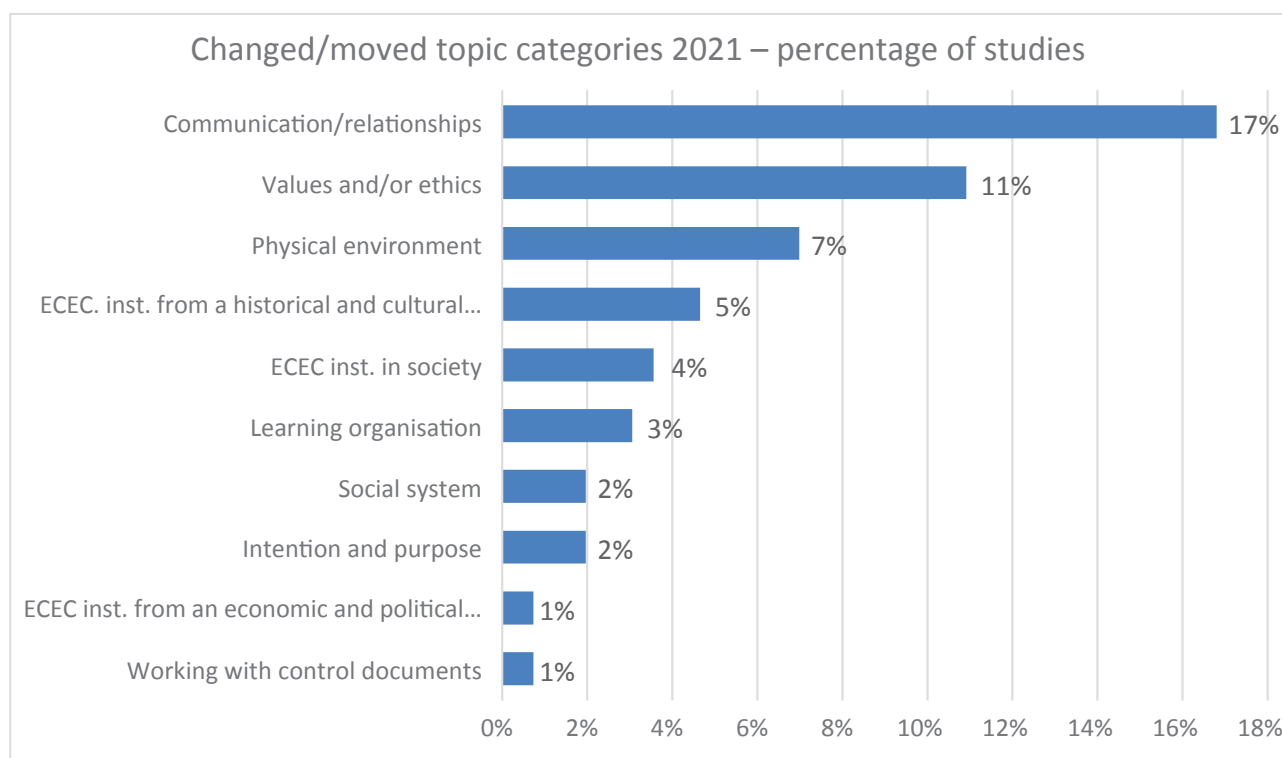


Figure 12: Topics that have been moved and/or reformulated in 2021 and percentage of the studies that have researched these topics.

3.5 Study subjects and informants of the research

The included studies were also coded for information about who the study subjects are and who informs the studies. Study subjects are the actors who are the focus of the study's research, while informants refer to the persons who are observed, interviewed or who in some other way contribute data/information to the study. It is important to point out that the informants are not always identical to the study subjects. For example, in a study that explores conditions related to 0-year-olds, parents or ECEC staff will often be interviewed as informants, while the situation or experiences of the 0-year-olds are the study subjects/actors being investigated by the study.

Figure 13a and 13b presents an overview of the different groups registered as study subjects and informants in the 255 studies included from 2019 to 2021. As mentioned, studies involving children as study subjects will not necessarily include children as informants. In 2021, a total of 65 studies were conducted in which children were study subjects, but where the children did not participate as informants in the study.

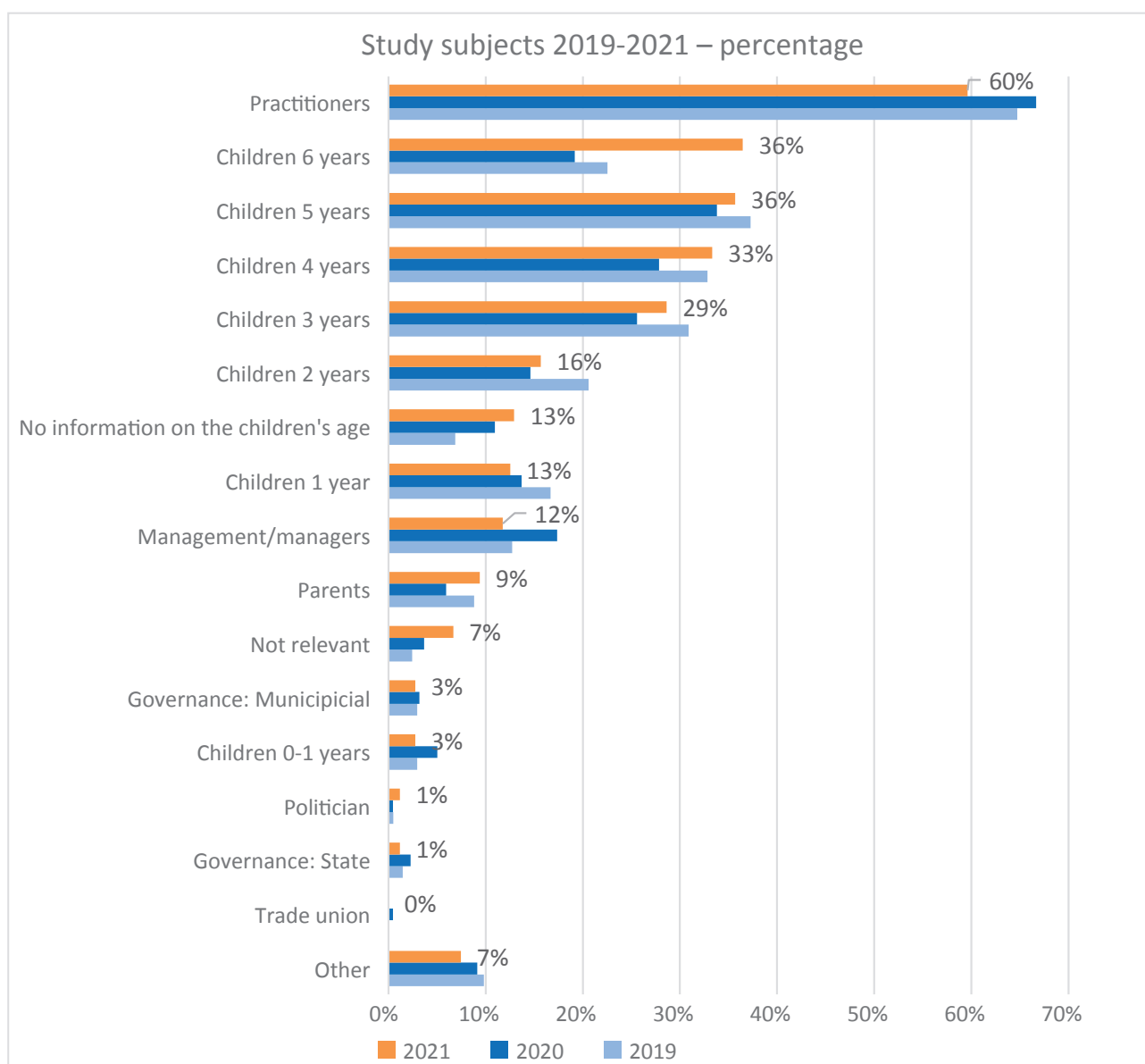


Figure 13a: Percentage distribution of study subjects in 2019, 2020 and 2021. It is possible to register multiple age groups for a single study. Figures from 2019 and 2020 are taken from background data from Furenes et al. (2022) and Guldbrandsen et al. (2023), respectively. The percentage for 2021 is shown on the data label.

Figure 13a shows that 60% of the studies published in 2021 have practitioners as study subjects. This has been the largest category since 2017, but we are now seeing a slight decrease from 67% in 2020. Some changes to highlight for 2021 compared to 2019 and 2020 are an increase in the percentage of studies that include 3-year-olds as study subjects (36% in 2021, compared to 19% in 2020 and 23% in 2019) and a decrease in the management/managers category from 17% in 2020 to 12% in 2021. There is also an increase in the percentage of studies with parents as study subjects from 6% in 2020 to 9% in 2021.

If we look at children in all categories as a whole, these constitute 62% in 2021 (Figure 14). Therefore, in 2021, there are approximately the same number of studies with practitioners as study subjects (60%) as studies with children as study subjects (62%). Note that a study can have multiple study subjects..

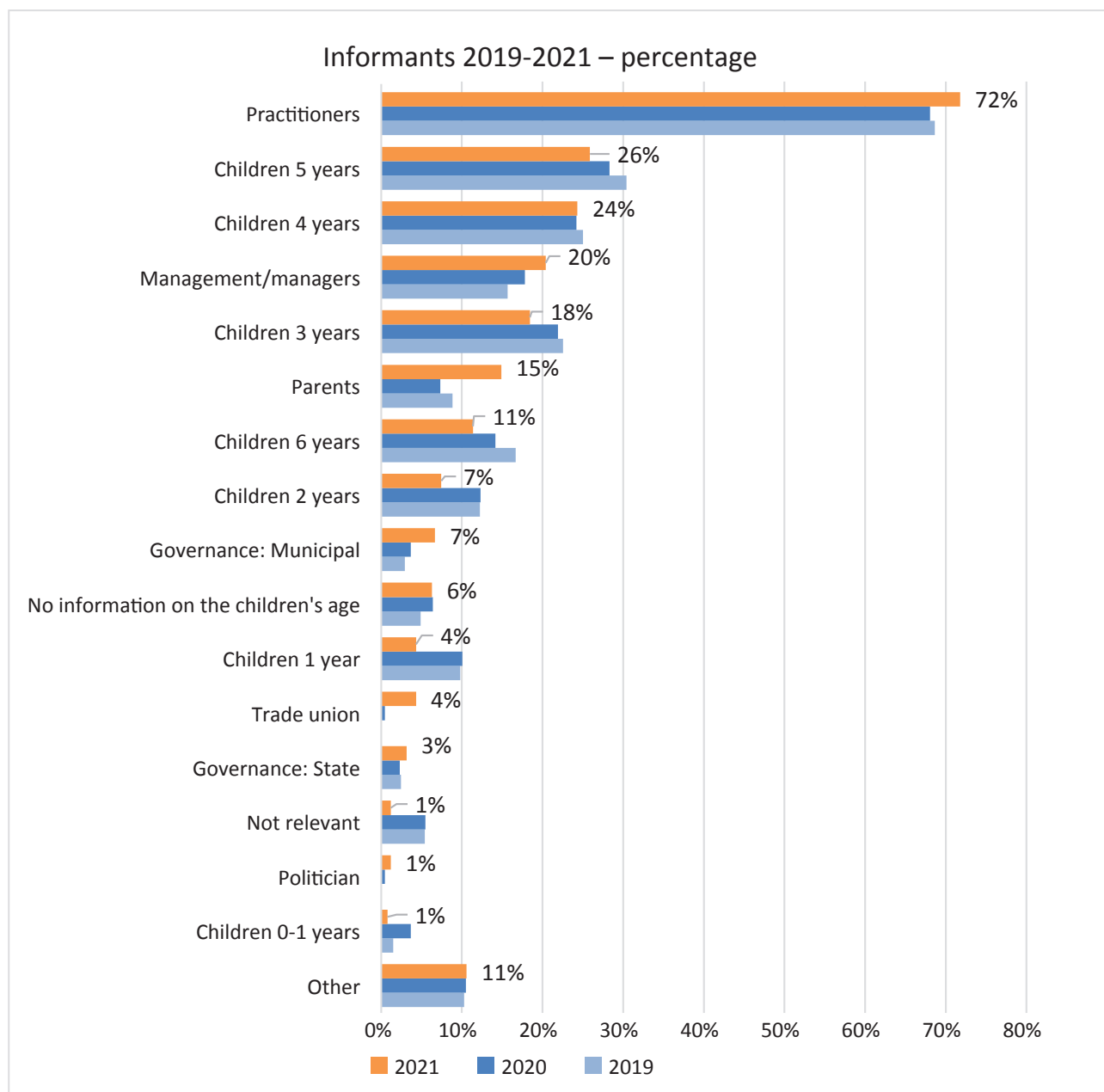


Figure 13b: Percentage distribution of groups providing information for the studies in 2019, 2020 and 2021. It is possible to register multiple informant groups for a single study. Figures from 2019 and 2020 are taken from Furenes et al. (2022) and Guldbrandsen et al. (2023), respectively. The percentage for 2021 is shown on the data label.

Figure 13b shows that practitioners are still the most frequently used informants in Scandinavian ECEC studies, a trend that has continued since informants were first registered in 2017. In 2021, practitioners were informants in 72% of the studies, an increase from 68% in 2020 and 69% in 2019. This may indicate an increasing tendency in the use of practitioners as informants, even though the changes are modest. It is worth noting that it is common for studies to include several types of informants. Furthermore, we see that the proportion of studies that use managers as informants has increased to 20% in 2021, from 18% in 2020 and 16% in 2019. The proportion of studies that include parents as informants has also risen, from 7% to 15%, from 2020. The category of *others* has seen small changes over the past three years, and is at 11% in 2021, which is the same as in 2020 and one percent down from 2019. This year, we find informants in this category who are described as the researcher, students, teachers, school children, photographs, artists and public documents/registry data.

Figure 14 shows the development from 2019–2021 in the percentage of studies with children as study subjects and studies with children as informants. Children as informants means studies where, for example, video observations, measurements and/or interviews of children are included as part of the source data.

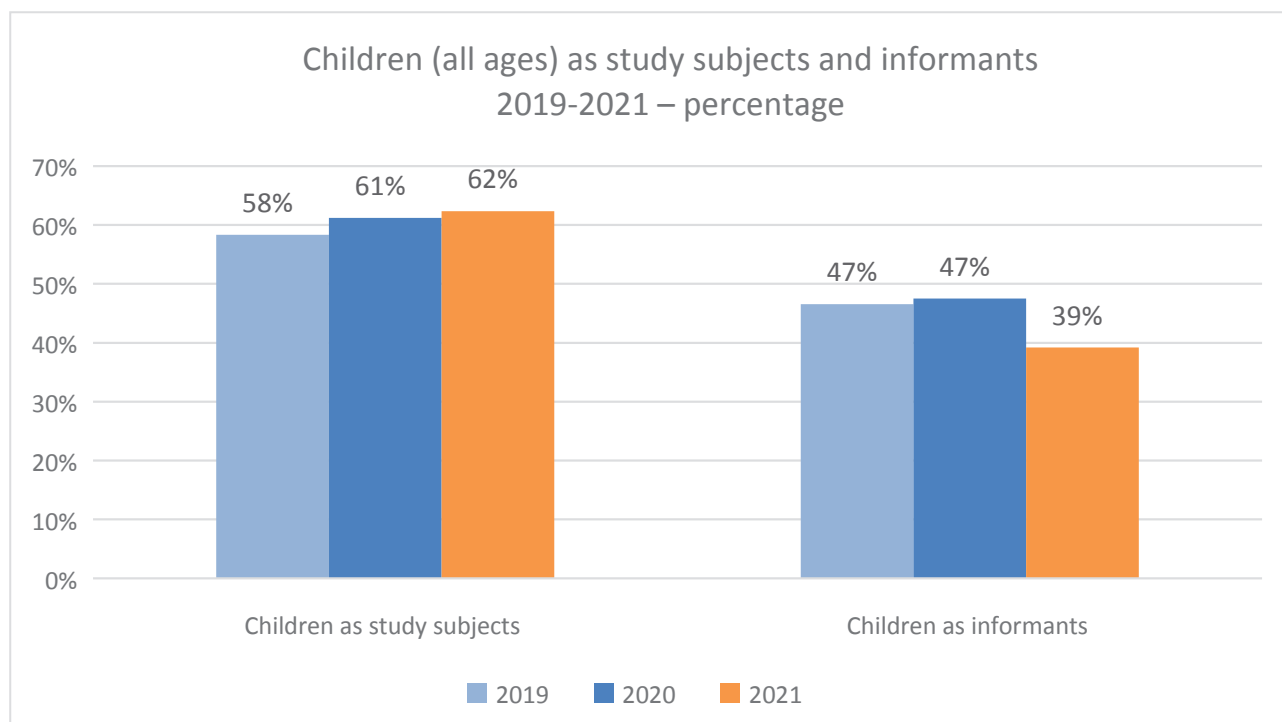


Figure 14: The number of studies that include children (in one or more age categories) as study subjects or informants in 2019–2021 is shown as a percentage of the total number of studies for the year. Figures from 2019 are taken from background data from Furenes et al. (2022) and figures from 2020 from Guldbrandsen et al. (2023).

In 2021, 39% of studies (100 of 255 studies) included children (in one or more age categories) as informants, down from 47% in 2020 and 2019. During the last three years, we have observed an increasing use of adults as informants (Figure 13b), while the number of studies that include children as informants has decreased. However, we see from Figure 14 that the percentage of studies that include children as study subjects has increased somewhat over the last three years, so it is unlikely that this explains the change we are seeing. Reasons for this development may be challenges associated with ethical approvals to use children as interview or observation subjects due to an increasing focus on children’s privacy/data protection. This is an interesting development given that there is also an increasing focus on letting children’s voices be heard, both generally in society and in research.

Figure 15 provides a more specific overview of the age groups of children used as study informants.

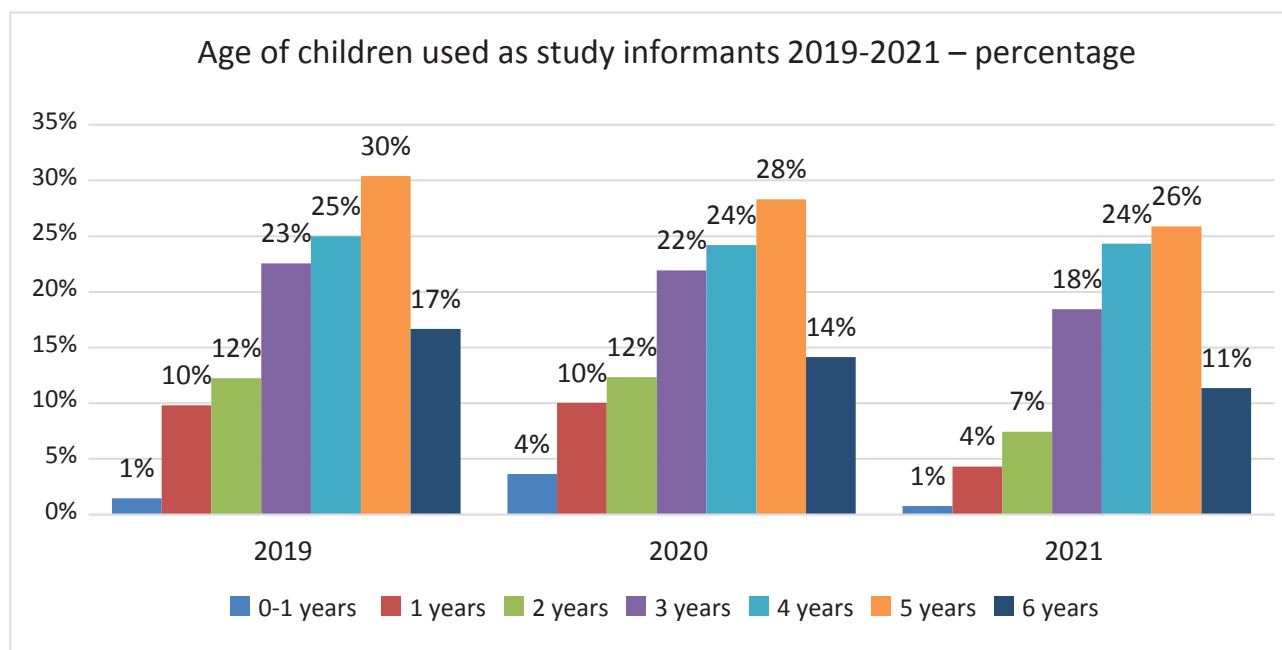


Figure 15: Age of children used as study informants from 2019–2021 as a percentage of all included studies. It is possible to register multiple age groups for a single study. Figures from 2019 have been obtained from Furenes et al. (2022) and figures from 2020 from Guldbrandsen et al. (2023).

Figure 15 shows the proportion of studies that involve children in the various categories as informants, presented as a percentage of the total number of studies. From 2019 to 2021, we see a decrease in all age categories of children (the category 0–1 years is rounded down in 2019 and up in 2021). The oldest children (3–6 years) continue to be the informants most often used in the included studies, as we have also seen in previous reviews (Figure 11 Guldbrandsen et al. (2023)). Of these, five-year-olds were used in 26% of the 2021 studies, while four-year-olds, three-year-olds and six-year-olds were used respectively in 24%, 18% and 11% of the studies in 2021. We see a tendency towards a decrease in all these age categories in recent years. In 2020, there was a fourfold increase in the proportion of studies with informants in the category 0–1 year, compared to 2019. In 2021, we observed that the percentage of studies that include the youngest children (0–2 years) as informants decreased dramatically. Specifically, we see a reduction of 3 percentage points for children aged 0–1-year, 6 percentage points for 1-year-olds, and 5 percentage points for 2-year-olds compared to 2020.

Another trend is the decrease in studies involving six-year-olds (from 17% in 2019 to 11% in 2021). Some of these studies focused on pre-school children, while others looked at children in ECEC across different age groups, including six-year-olds. One reason for the decrease in the use of 6-year-olds as informants for 2021 may be due to the fact that Swedish pre-school classes have been removed from the inclusion criteria in the 2021 search. This is done because the Swedish pre-school class is part of Swedish primary school, and not ECEC.

3.6 Assessment of research quality in ECEC research

As in previous years, research quality has been assessed based on predefined criteria, as described in Chapter 2.4. The studies have been assessed as high, medium or low quality. The criteria for achieving high or medium quality are mainly based on whether the study has been reported with sufficient transparency and whether the researchers are able to answer the research questions through the study as it is described.

In 2021, 70 studies have been assessed as high quality, 117 studies have been assessed as medium quality and 68 studies have been assessed as low quality. In Figure 16, which shows the percentage distribution of studies across the three quality categories, we can see that the majority of studies were also assessed as medium quality in 2021. The proportion is 46%, which is a marginal change from 2020. Otherwise, we see that fewer studies have been assessed as high quality (down five percentage points) while more studies are assessed as low quality (up six percentage points) in 2021, compared with the previous reporting (2020). The trend we have seen in the last three years with an increasing percentage of high-quality studies (as of 2017, see Figure 8 in Furenes et al. (2022)) thus does not continue in 2021.

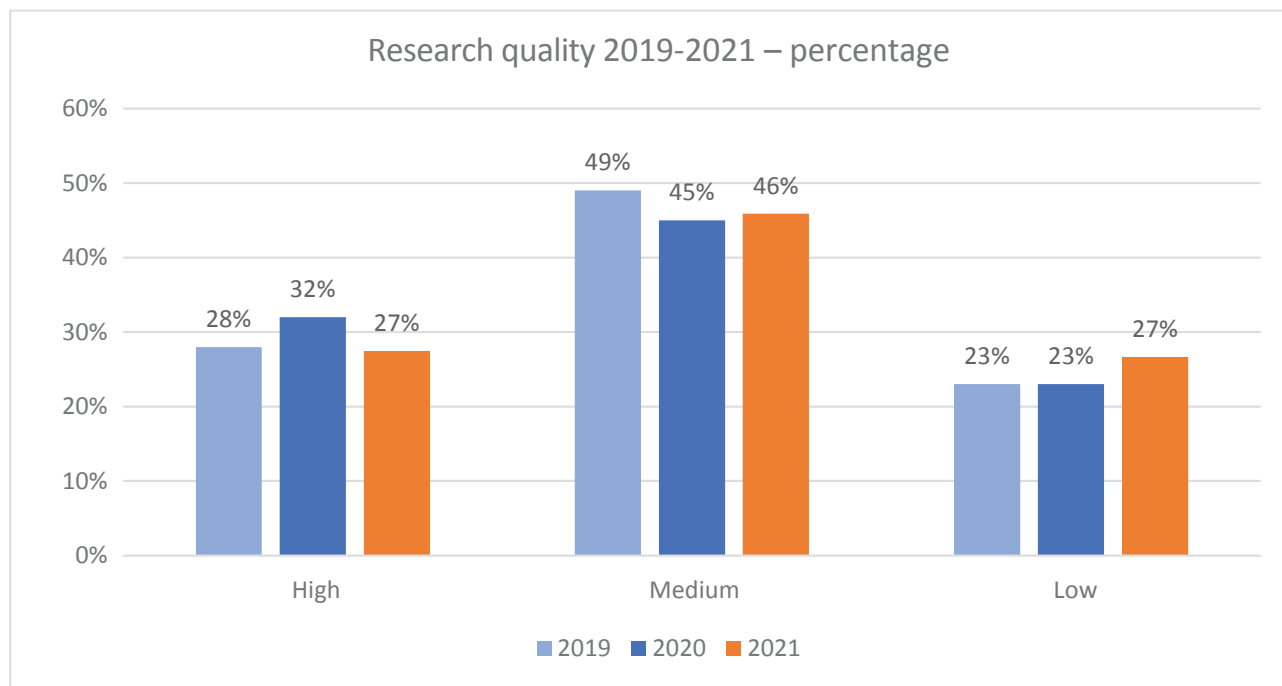


Figure 16: Overall assessment of the research quality of studies for 2019, 2020 and 2021. Only one assessment has been provided for a single study.

The proportion of medium-quality studies has ranged between approximately 40% and 50% since 2008 (with the exception of 2016). This year’s review shows that the percentage is still in this area. As highlighted in the previous report, the percentage of high-quality and low-quality studies has historically varied from 2006 to 2021 (Figure 8 in Furenes et al. (2022)). In summary, this year’s review shows a general decrease in the assessed quality of Scandinavian ECEC research compared to 2019 and 2020. At the same time, it is important to emphasise that the quality of the studies from 2021 does not appear to be particularly low when compared with the years before 2019.

Also, for 2021, there are differences in assessed quality based on the type of publication, research method, purpose, as well as language and country (Appendices 6-10). Journal articles and theses/dissertations (little data for the latter) still appear to be of a higher quality than other publications. This may have to do with peer review, which is intended to ensure the quality of scientific publications in journals. For 2021, book chapters make up five percent of the included studies, which is an increase from 2020 when no book chapters were included. Furthermore, more than half of these book chapters are assessed as low quality. In addition, we see that reports are rarely assessed as high quality. This is not surprising, as reports and book chapters do not strive to follow scientific reporting standards.

In 2020, we observed that studies using qualitative methods generally had a lower percentage of high-quality studies compared to studies that used quantitative methods, reviews and studies

with mixed methods. The trend becomes more prominent in 2021: there is a slight decrease in the number of qualitative studies assessed as high quality (down 2 percentage points), and an increase in those assessed to be of low quality (up 7 percentage points) compared with the previous year. There are fewer quantitative studies that receive high quality assessments in 2021 (down 4 percentage points), but there is also a reduction in the number of quantitative studies assessed as low quality (down 9 percentage points). The same also applies to studies that use mixed methods and reviews: there are fewer studies that achieve a high quality assessment, but also fewer that are assessed as low quality. This could be linked to the somewhat different traditions for methodological reporting in the various research methods.

We also see differences in quality assessment in 2021 depending on language and country. There is generally a higher assessed quality of English-language publications compared to publications written in Norwegian, Swedish or Danish. The vast majority (80%) of publications written in English are assessed as high or medium quality and will therefore be included in the NB-ECEC database. Similarly, just over half (56%) of the studies written in Swedish, Norwegian and Danish were assessed as high or medium quality. As in 2020, studies conducted in Norway and Sweden also achieve better quality assessments in 2021. In 2021, 80% of studies from Norway and Sweden were assessed as being of high or medium quality, compared to 48% of studies from Denmark. The reasons for these differences in quality based on language and country can be many and complex, and we have not been able to delve further into these in this report.

4. Summary and conclusion

The 2021 review shows that there is still an increase in the number of published studies on Scandinavian ECEC research, a trend that goes all the way back to 2006. 255 studies have been included in 2021. 46% of the included 2021 studies are assessed as medium quality, while 27% are assessed as high quality and 27% as low quality. There is a decrease in high-quality studies combined with an increase in low-quality studies. While 2020 saw a general increase in study quality in Scandinavian ECEC research (based on the quality assessment criteria developed for NB-ECEC), we see the opposite in 2021: This year's review shows a general decrease in the assessed quality of Scandinavian ECEC research compared with the two previous years. However, it is important to emphasise that the assessed quality of the studies from 2021 does not appear to be particularly low when compared with the years before 2019.

The number of studies from all countries has increased over the past two years. Sweden continues to contribute the most studies and the percentage has increased since 2020. Denmark has the same proportion of studies as in 2020 (18%), while Norway has increased its proportion from 37% to 38% from 2020 to 2021. The category covering other countries (other OECD countries) also shows an increase from 2020 to 2021, both in number and in proportion (8% to 10%). The proportional increase for all these categories can be explained by the fact that studies can be coded to more countries, and this increase can possibly be explained by increased collaboration between countries.

The increase in the proportion of studies published in English continues. Possible reasons may include increased internationalisation and international collaboration. We also see that studies published in English are assessed as being of higher quality to a much greater extent compared to studies written in Scandinavian languages. This is consistent with the findings for 2020 (Guldbrandsen et al.) and 2019 (Furenes et al.).

The research methods that were used most in 2021 within Scandinavian ECEC research are still mainly qualitative, and the proportion of studies that use qualitative methods has increased somewhat in 2021. We also see that there are fewer studies using mixed methods and reviews, but the proportion of studies using quantitative methods is at the same level as in 2020. Therefore, quantitative methods are no longer increasing.

In 2021, as in previous years, the most studied topic is *teaching and learning*. At the same time, there are major changes within the categories of *methodology* and *pedagogical practices*. In recent years, there has been a large increase in studies within the topic of *methodology*, which has seen a sixfold increase since 2019. The change may be evidence of an increasing focus on methodology in ECEC research. We also see a large decrease in the categories of *pedagogical practices* and *organisation and management*.

It is also important to highlight findings in this year's review that deal with the study's informants. During the last three years (2019–2021), there has been an increasing use of adults as informants, while the number of studies that include children as informants has decreased. This is despite the fact that there is an increase in the proportion of studies with children as study subjects. In 2021, 39% of studies included children as informants, down from 47% in 2020. We see that in the period 2019–2021, there has been a decrease in all age categories of children as informants, and that the proportion of studies that include the youngest children (0–2 years) decreased remarkably from 2020–2021. The proportion of studies that include parents as informants has more than doubled since 2020.

With regard to the correlation between assessed quality of studies and study method in 2020, we saw that studies using qualitative methods generally had a lower proportion of studies assessed as high quality compared to studies using quantitative methods, reviews and studies with mixed methods. In 2021, this tendency becomes even more apparent. There is also a difference in quality assessments based on language and country. Studies published in English are assessed as having higher quality compared to studies published in Scandinavian languages. 80% of the publications in English are considered to be of high or medium quality, compared to 56% for the Scandinavian languages. Studies conducted in Norway and Sweden are generally rated better than studies conducted in Denmark.

Based on the review of empirical Scandinavian ECEC research in 2021, we can conclude the following: We see a continued increase in the number of published studies within Scandinavian ECEC research, but quality assessments of these indicate a certain decline compared to 2020. Qualitative methods are still strongly dominant, and studies with the purpose of exploring relationships between variables are increasing. Otherwise, we see a large increase in studies with the topic of ECEC methodology in recent years. The new codes that have been introduced as part of this review seem to identify changes in topics that are relevant. The English language is increasingly used, and these publications are to a greater extent assessed as being of higher quality compared to publications in Norwegian, Danish and Swedish. Children are now used as informants to a lesser extent than before in the studies, and the youngest children are hardly being used as informants at all. In 2021, parents are used as informants to a greater extent than in previous years.

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Bondebjerg, A., Jusufbegovic, L., Qvortrup, L. & Vestergaard, S. (2019) *Forskningskortlægning og -vurdering af skandinavisk dagtilbudsforskning for 0-6-årige i året 2017*. Danish Clearinghouse for Educational Research

Furenes, M. I., Reikerås, E. K. L., Moser, T. & Munthe, E. (2022) *Trender i empirisk barnehageforskning i de skandinaviske landene 2006-2019 - en forskningskartlegging*. Knowledge Centre for Education, University of Stavanger

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Appendices

Appendix 1 Project members

The following persons were responsible for screening titles, abstracts and full text:

Astrid Gulbrandsen, Knowledge Centre for Education, University of Stavanger

May Irene Furenes Klippen, Knowledge Centre for Education, University of Stavanger

Elaine Munthe, Knowledge Centre for Education, University of Stavanger

Nina Kalvatn Friestad, Knowledge Centre for Education, University of Stavanger

Ling Guo, Knowledge Centre for Education, University of Stavanger

The following people were responsible for coding and quality assessment:

Astrid Gulbrandsen, Knowledge Centre for Education, University of Stavanger

May Irene Furenes Klippen, Knowledge Centre for Education, University of Stavanger

Elaine Munthe, Knowledge Centre for Education, University of Stavanger

Nina Kalvatn Friestad, Knowledge Centre for Education, University of Stavanger

Ling Guo, Knowledge Centre for Education, University of Stavanger

Enrico Pollarolo, Knowledge Centre for Education, University of Stavanger

Dieuwer Ten Brak, FILIORUM/Centre for Learning Environment, University of Stavanger

Marianne Ree, FILIORUM, University of Stavanger

Francesca Granone, FILIORUM, University of Stavanger

Elin Reikerås, FILIORUM, University of Stavanger

Appendix 2 Search string:

We have followed the same protocol as in previous years. We changed the English search terms in 2018.

The following words have been used for searches in national and international databases:

Scandinavian search terms: barnehage*, familiebarnehage*, førskol*, dagt*, daginstitusjon*, daghjem, förskol*, daghem, lekskola*, förskolepedagogik, familjedaghem, dagis, pedagogisk omsorg, öppen förskol*, børnehave*, dagpleje*, vuggestue*, småbørnspædagogi*, dagtilbud*, daginstitution*

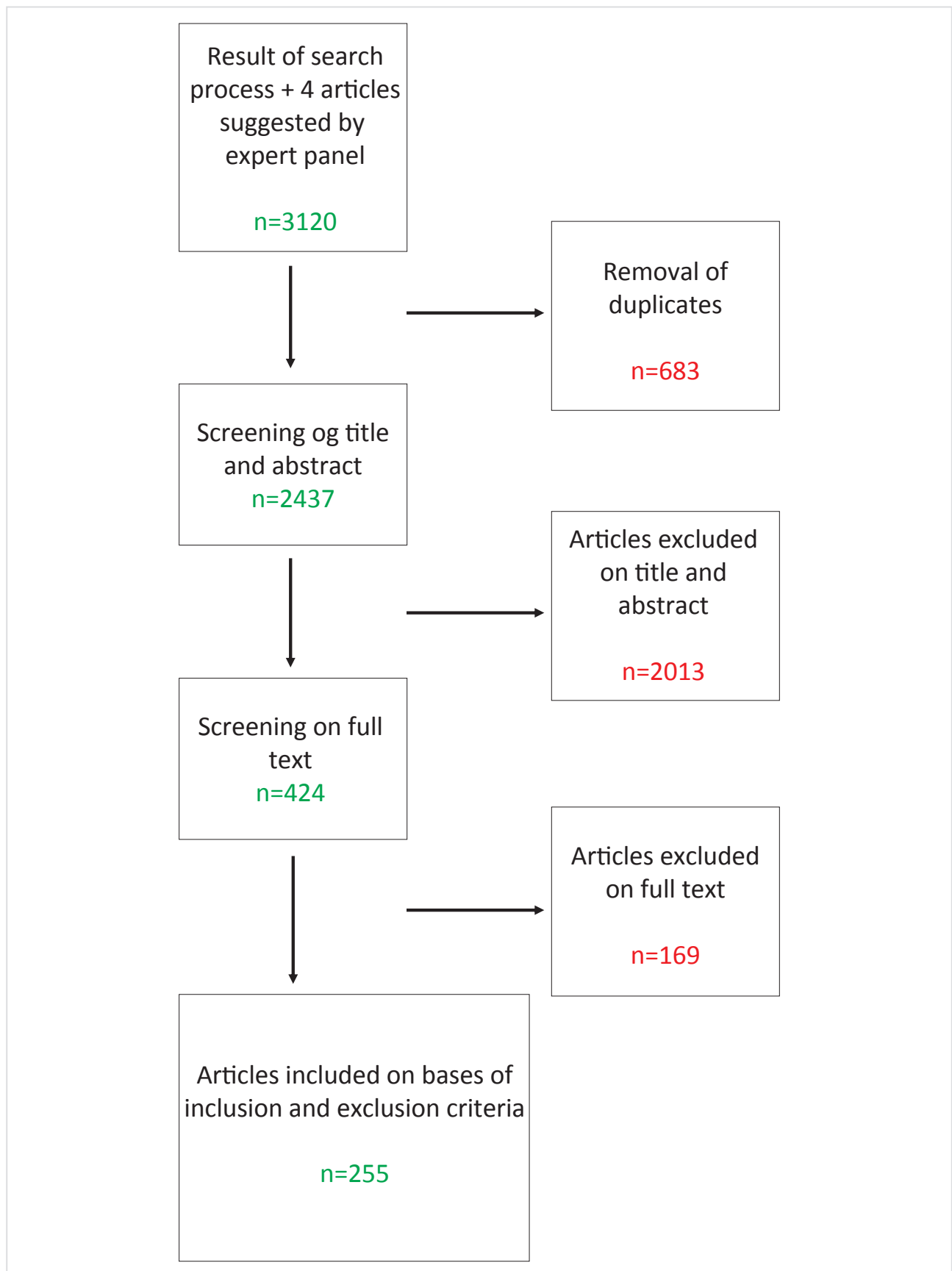
English search terms: "child care center" OR "child care centre" OR "child development center" OR "child development centre" OR "child* academic development" OR "crèche" OR "day care" OR "daycare" OR "day-care" OR "early child* care" OR "early child* education" OR "early child* intervention*" OR "early child* program*" OR "early child* services" OR "early education* provision" OR ecc OR ecec OR ece OR kindergarten OR "nursery school" OR "pre K" OR "pre kindergarten" OR "pre school" OR "pre-K" OR "pre-kindergarten" OR "pre-primary education" OR "preschool" OR "pre-school" OR toddler*) AND GE (norway OR sweden OR denmark). Limiters - Peer Reviewed; Date Published: 20210101-20211231; Journal or Document: Journal Article (EJ); Language: English Search modes - Boolean/Phrase

Appendix 3 Overview of databases and number of hits:

Source	Search date	Hits 2019	Hits 2020	Hits 2021
Barn*	23.02.2023	11	16	8
Bibliotek.dk	23.02.2023	268	297	226
DIVA	23.02.2023 Scandinavian searches only + reports and monographs in English	536	67	68
Eric	08.02.2023	53	127	121
Idunn	23.02.2023	4	7	15
Libris	23.02.2023	83	65	35
NAFOL	24.02.2023		6	1
NORA	10.02.2023	29	32	21
NORART	COVERED IN ORIA	54		
Nordic Journal of Pedagogy and Critique*	24.02.2023	0	3	3
ORIA	23.02.2023	171	309	53
Paideia*	24.02.2023	2	5	2
SwePub	23.02.2023	316	262	295
Scopus	08.02.2023	1662	1824	1678
Web of Science	08.02.2023	145	597	590
Proposed by expert panel			2	4
Total			3619	3120

Sources highlighted using * were searched manually.

Appendix 4 Summary of the search and screening phase

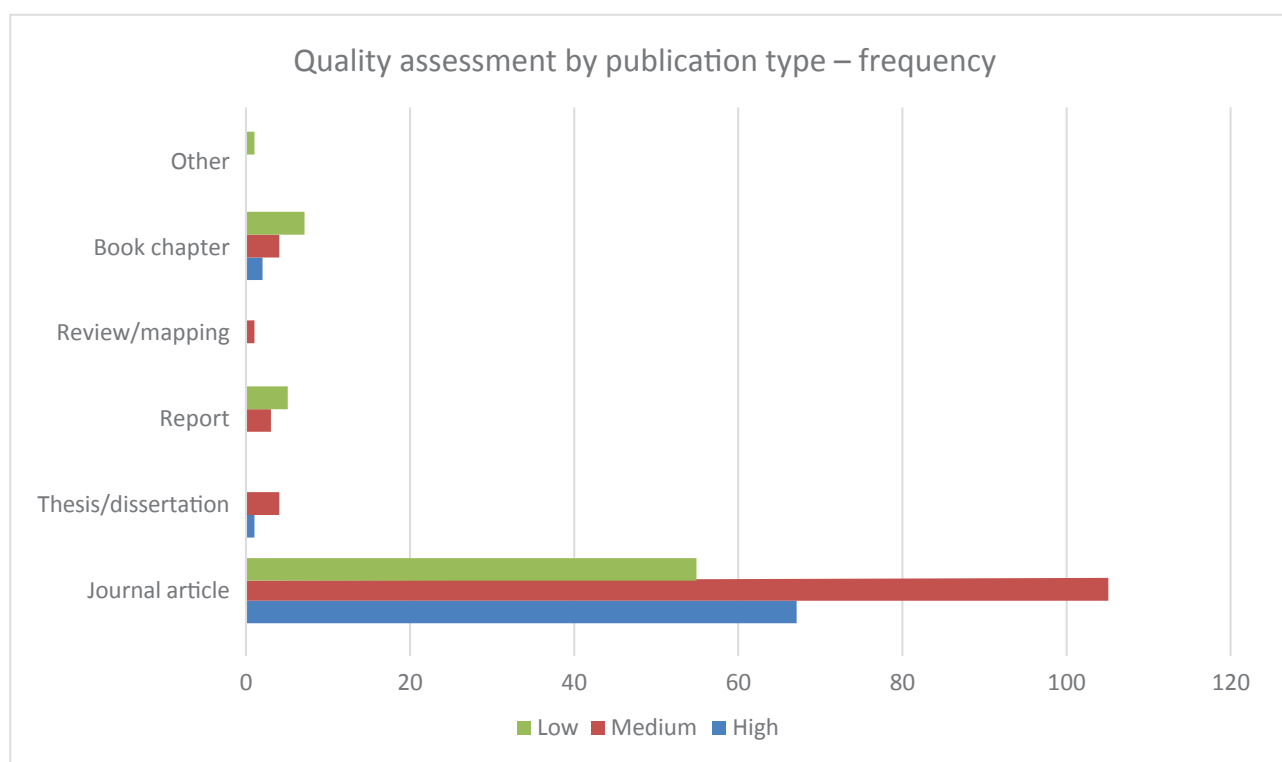


Appendix 5 Overview of the reasons for excluding articles

Reason	Title and abstract	Full text	Total
Year of publication	66	13	79
Country	17	6	23
Target group	4	6	10
Subject/topic	1757	36	1793
Evidence	36	58	94
Type of publication	34	17	51
Full text unavailable/not received within deadline		19	19
Duplicate	99	14	113
TOTAL	2033	169	2202

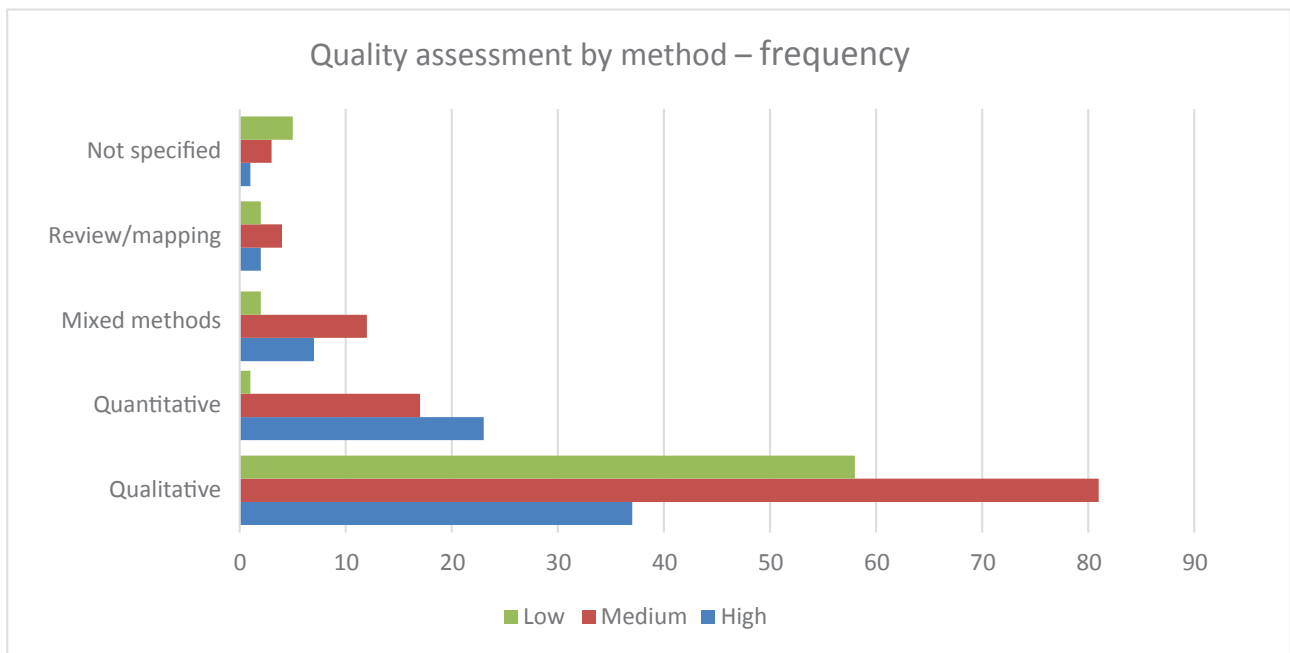
Please note that a study may have multiple reasons for exclusion and that not all possible exclusion criteria will necessarily have been registered.

Appendix 6 Quality assessment by publication type 2021



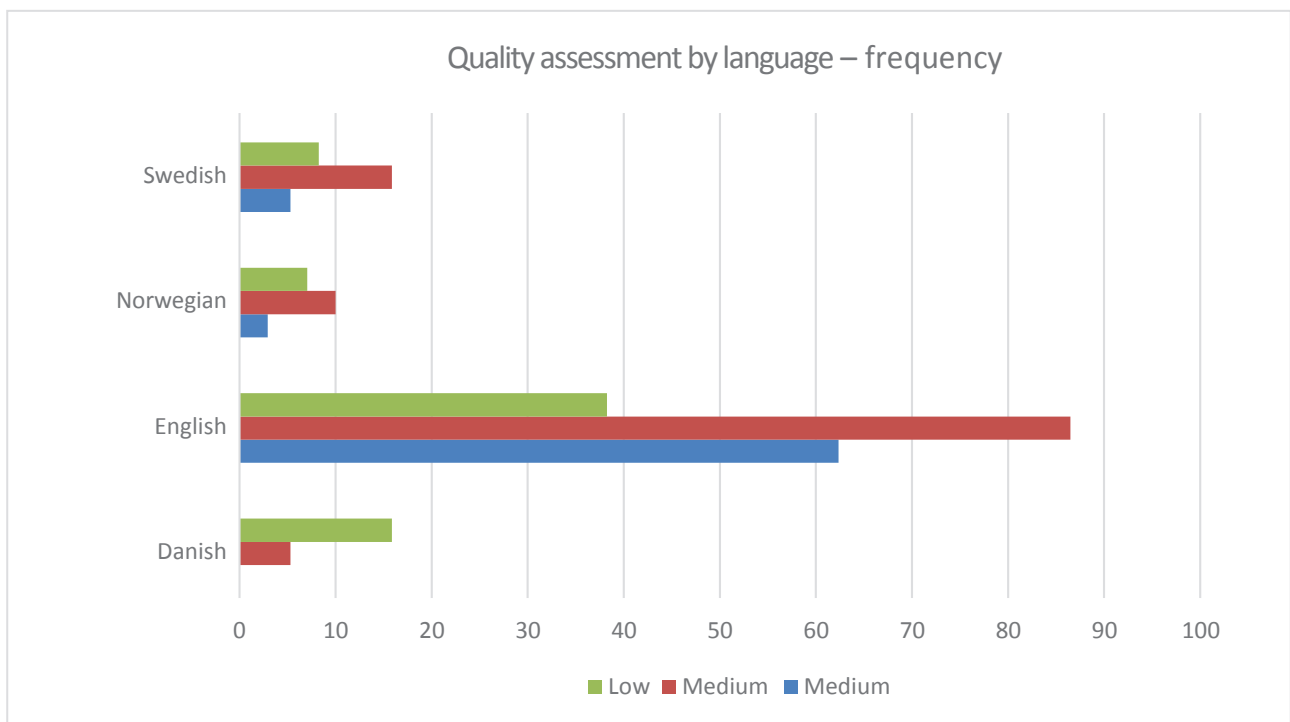
Quality assessment according to type of publication 2021. Only one assessment has been provided for a single study.

Appendix 7 Quality assessment by method 2021



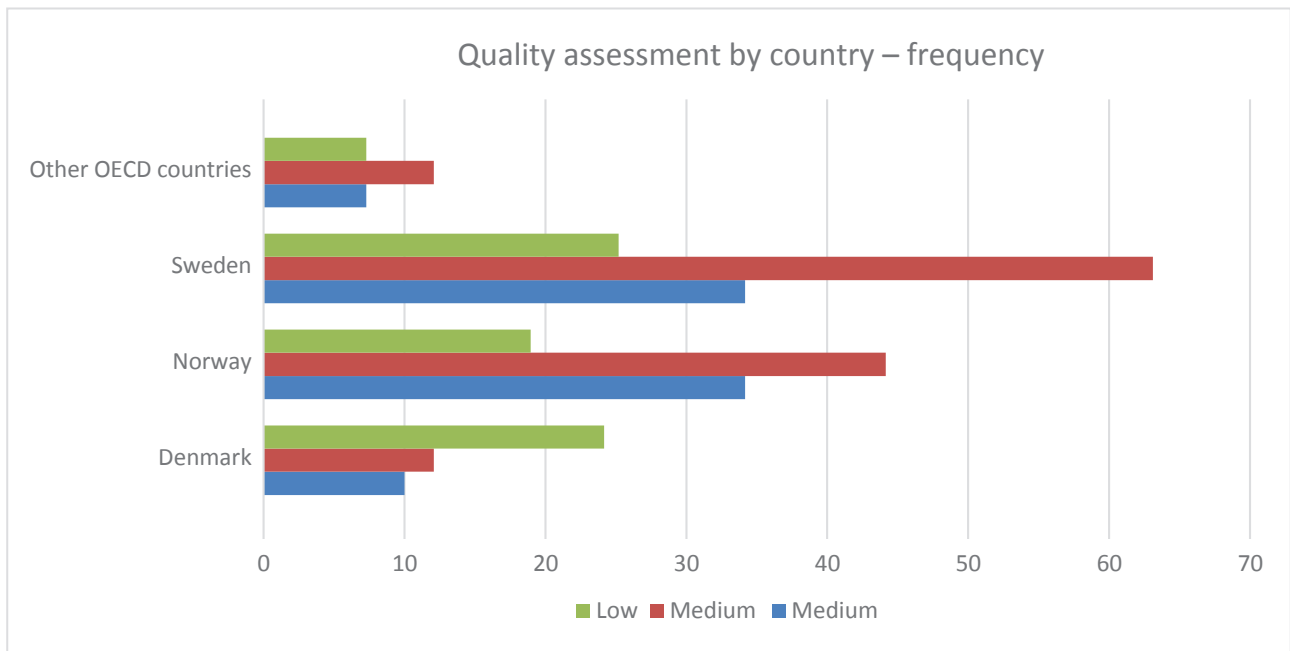
Quality assessment according to method 2021. Only one assessment has been provided for a single study.

Appendix 8 Quality assessment by publication language for 2021



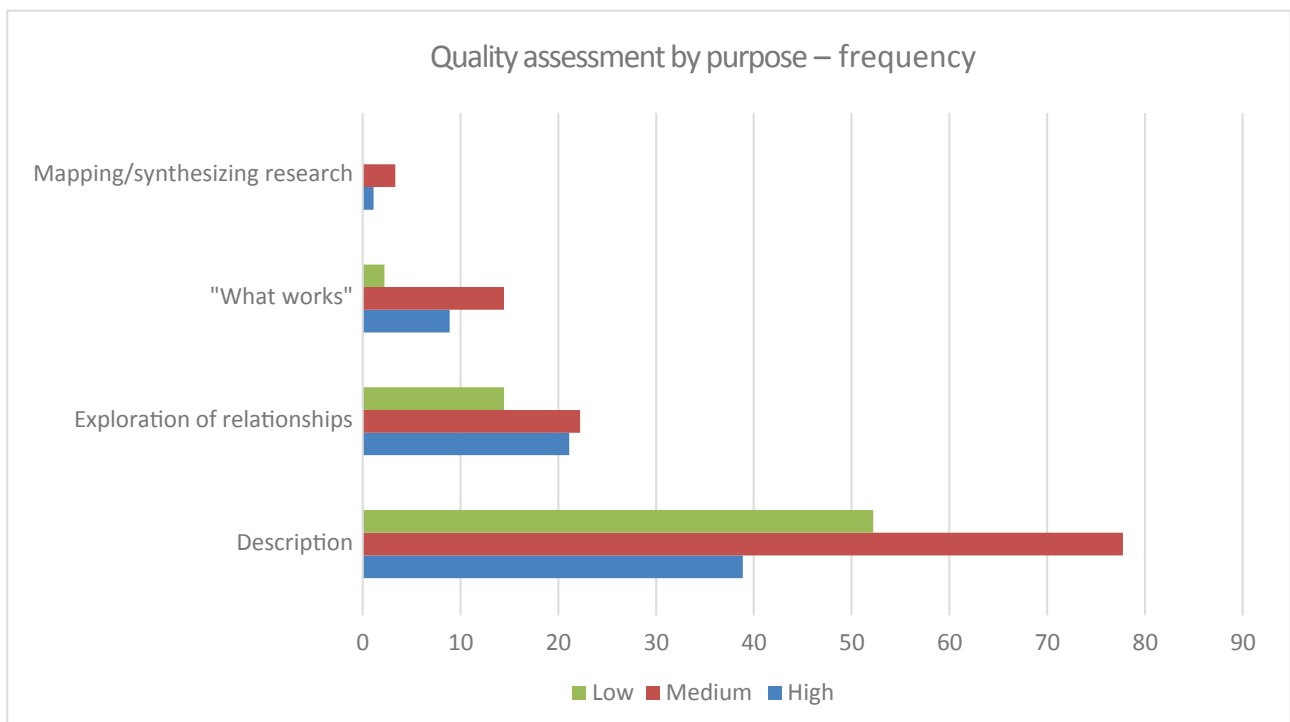
Quality assessment according to publication language 2021. Only one assessment has been provided for a single study.

Appendix 9 Quality assessment by country for 2021



Quality assessment according to study country 2021. Only one assessment has been provided for a single study.

Appendix 10 Quality assessment by study purpose 2021



Quality assessment according to study purpose 2021. Only one assessment has been provided for a single study.

Appendix 11 List of all 255 studies included for 2021 (high, medium and low quality)

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- Alkhede, M. & Holmqvist, M. (2021). Preschool Children's Learning Opportunities Using Natural Numbers in Number Row Activities. *Early Childhood Education Journal*, 49(6), 1199-1213.
- Alme, H. & Reime, M. A. (2021). Nature kindergartens: a space for children's participation. *Journal of Outdoor and Environmental Education*, 24(2), 113-131.
- Almers, E., Askerlund, P., Samuelsson, T. & Waite, S. (2021). Children's preferences for schoolyard features and understanding of ecosystem service innovations—a study in five Swedish preschools. *Journal of Adventure Education and Outdoor Learning*, 21(3), 230-246.
- Alstad, G. T. & Sopanen, P. (2021). Language orientations in early childhood education policy in Finland and Norway. *Nordic Journal of Studies in Educational Policy*, 7(1), 30-43.
- Andersen, S. T. (2021). Børns stressreaktion i mødet med dagtilbud: -et casestudie om pædagogisk personales arbejde med 0-6-årige børns stressreaktioner i dagtilbud. *UCN Perspektiv*, (10), 7-15.
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- Bejnö, H., Roll-Pettersson, L., Klintwall, L., Långh, U., Odom, S. L., & Bölte, S. (2021). Adapting the preschool environment to the needs of children on the autism spectrum in Sweden: A quasi-experimental study. *Scandinavian journal of occupational therapy*, DOI: 10.1080/11038128.2021.1993330.
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- Berge, A. & Johansson, E. (2021). The Politics of Belonging: Educators' Interpretations of Communities, Positions, and Borders in Preschool. *International Research in Early Childhood Education*, 11(2), 24-40.

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