



The determinants of experiences and outcomes for children and young people in Childminding: A Rapid Review of the Research Literature

May 2024



About Early Childhood Ireland

Early Childhood Ireland is the leading national children's advocacy and membership organisation. We work in partnership with Early Years, School Age Care and Childminding settings to ensure that every child is thriving and learning. We advocate for an effective and inclusive system which values, supports and invests in childhood, children and services.



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ISBN 978-1-7395237-3-2

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Please cite this publication as: Early Childhood Ireland. 2024. *The determinants of experiences and outcomes for children and young people in Childminding: A Rapid Review of the Research Literature*. Dublin: Early Childhood Ireland.

Disclaimer: The present report does not represent the views of Early Childhood Ireland, but of the respective authors.

Foreword

Childminding has long been an intrinsic element of the Irish Early Years and School Age Care system in local communities alongside centre-based provision. Childminders have been the education and care choice for many parents and children, forming close relationships and bonds that are often sustained throughout and beyond childhood.

In mid-2024, Childminding in Ireland is at a pivotal turning point with the phased regulation of all Childminding services and the development of a national system of quality development supports. Decisions are being made by policymakers and politicians that will continue to reverberate as Childminding regularises and eligible parents receive public subsidies to meet the cost of fees for using registered Childminding.

The policy and political systems need to be child-centred and use research evidence of what is best for children in decision-making processes. Early Childhood Ireland commissioned this research report to provide policymakers and stakeholders with an unprecedented, state-of-the-art systematic review of the literature on the factors in Childminding associated with positive experiences and outcomes for children to inform their decision-making. We all need to see and use this research as the childminder's family home is a different learning and development context from centre-based services and is experienced differently by children.

Early Childhood Ireland believes that there is huge potential for Childminding to retain its unique status while also growing and professionalising to meet children's and families' needs and their right to high-quality services. All children should have access to consistently excellent Early Years and School Age Care as a basic right, through guaranteed high-quality service provision for children in their communities, including in childminders' homes.

This systematic review was conducted on behalf of Early Childhood Ireland by Dr Suzanne McCartney, Dr Franka Winter, Dr Glenda Walsh and Dr. Karen Orr, Centre for Educational Underachievement, Stranmillis University College, Belfast, Northern Ireland. Early Childhood Ireland thanks them for their expertise and concern with research rigour, their professionalism, and their commitment to using research evidence to enhance Early Years and School Age settings for children.

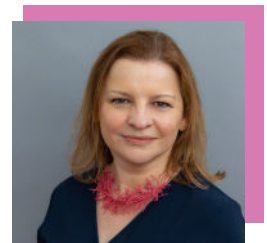
Thank you to the Department of Children, Equality, Disability, Integration and Youth for providing the funding to undertake this research.

A final thank you to the members of the Research Advisory Group: Fiona Kelleher, Quality Support Manager and Frances Byrne, Director of Policy, Early Childhood Ireland and Karen O'Sullivan, National Childminding Coordinator, DCEDIY.

This report is not the final word on research evidence on Childminding, but it is the most rigorous and comprehensive analysis available to Irish policymakers at this moment. That substantial research gaps exist is evident in this report, particularly for children under 3 years and of school age, and with children on their lived experiences in Childminding.

The report's findings are relevant to the continued implementation of the *National Action Plan for Childminding*, and to the delivery of *Nurturing Skills and Partnership for the Public Good*. We hope that this report will stimulate discussion and reflection among a wide audience on the determinants of positive high-quality experiences and outcomes for children from birth to 15 years participating in Childminding.

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Contents

Glossary	1
Executive Summary	2
1. Child determinants	3
2. Caregiver determinants	3
3. Structural determinants	3
4. Pedagogical determinants	4
1. Introduction: Determinants of experiences and outcomes in Childminding	6
1.1 Introduction	6
2. Methodology	8
2.1. Procedure	8
2.1.1. Search strategy	8
2.1.2. Screening and data extraction	9
2.1.3. Data extraction	10
2.1.4. Analytical approach	11
3. Quality Appraisal	12
3.1. Mixed Methods Appraisal Tool	12
3.1.1. Are participants representative of the target population?	13
3.1.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?	14
3.1.3. Are there complete outcome data?	15
3.1.4. Are the confounders accounted for in the design analysis?	15
Summary of the Quality Appraisal	16
4. Results	17
4.1. Which factors affect children’s experiences and quality of care?	17
Summary of factors that affect quality of care	28
4.2. Which factors affect children’s language and communication outcomes?	28
Summary of factors that affect children’s language and communication outcomes:	30
4.3. Which factors affect children’s socio-emotional outcomes?	30
Summary of factors that affect children’s socio-emotional outcomes:	33
4.4. Which factors affect children’s positive and challenging behaviours?	34
Summary of factors that affect children’s positive and challenging behaviours:	37

4.5. Which factors affect children’s health and wellbeing?	37
Summary of factors that affect children’s health and wellbeing:	40
4.6. Which factors affect children’s cognitive outcomes?	40
Summary of factors that affect children’s cognitive outcomes:	41
5. Discussion	42
5.1. Child determinants	42
5.2. Caregiver determinants	45
5.3. Structural determinants	49
5.4. Pedagogical determinants	53
6. Conclusion	56
6.1. The value of a child-centred approach	56
6.2. The need for a passionate, committed and skilful caregiver	56
6.3. The necessity of having a flexible, accessible and suitably funding Childminding service	56
6.4. The importance of a relational and playful pedagogy	57
References	59
Included studies	59
Additional references	62
Appendix 1: Sample search string (APA PsychINFO)	64
Appendix 2: Screening tools	65
Appendix 3: Data Extraction Tool	67
Appendix 4: Quality appraisal questions	68
Appendix 5: Quality appraisal of included studies (Mixed Methods Appraisal Tool (Hong et al., 2018))	69

Glossary

Term	Definition
Confounders	Confounders are factors that predict both the outcome of interest and the exposure
Determinants	Factors found to influence experiences and outcomes
Experiences	In this study, process quality indicators (such as the quality of caregiver interactions), structural indicators (such as adult-child ratios), types of activities, and children's preferences and dislikes
Process quality	Process quality concerns the more proximal processes of children's everyday experiences and involves the social, emotional physical, and instructional aspects of staff-child and peer interactions while being involved in play, activities or routines (OECD, 2018)
Structural quality	The more regulable features of settings, such as child-staff ratios, group size and staff training/education. Structural features are considered important preconditions for process quality, which in turn is most strongly related to child development, well-being and learning (OECD, 2018)
Global quality	A measure of stimulation and support in early education and care environments. It combines several elements, including organisation of the environment, learning materials, and variety of activities and environments
Systematic review	Identifies, appraises and synthesises all the empirical evidence that meets pre-specified eligibility criteria to answer a specific research question using explicit, systematic methods that are selected with a view aimed at minimising bias, to produce more reliable findings to inform decision-making (Campbell)
Observational study	Where researchers directly and systematically observe and record the behaviour of research participants, precisely recording activities, events, processes
Exposure	The 'dose' that may be associated with an outcome of interest, e.g., the frequency and duration of Childminding participation
Longitudinal cohort study	Researches the lives of groups of individuals who experience the same life events over time, sometimes from birth or pregnancy. Growing Up in Ireland and the National Institute of Child Health and Development (USA) are examples

Note: The terminology used to describe Early Years and School Age Care varies throughout the report to reflect the terms used in the research cited.

Executive Summary

Introduction

Childminding, also known as home-based childcare or family day care, is an essential Early Years and School Age Care service that intends to support children's learning, development and wellbeing and enables parental employment. Despite its importance, research on Childminding has historically been limited, leading to an incomplete understanding of the factors that contribute to positive outcomes and experiences for children in these settings. This report aims to address this gap by providing a comprehensive review of existing literature on the determinants of experiences and outcomes for babies, toddlers, children, and young people who participate in Childminding.

Methodology

The report employs a 'rapid review' methodology to synthesise findings from existing international literature on Childminding. This approach, part of the "systematic review" family, allows for a rigorous yet swift examination of relevant studies, ensuring that the review covers a broad range of factors affecting children's experiences and outcomes in home-based Early Years and School Age Care settings.

Search terms for the key concepts "Childminding", "outcomes" and "experiences" were developed through term harvesting from a set of known articles, database thesauri, brainstorming by the research team and consultation with the advisory group. Search strings were adapted to match the conventions and functionality of each database. Titles and abstracts were searched. Searches were not restricted by date or language.

Covidence, a digital screening and data extraction tool for conducting systematic reviews, was used throughout the screening and data extraction process. Screening was carried out in two stages – title and abstract screening, and full-text screening – to exclude ineligible publications. The initial search produced 13,062 results. After removing duplicates, 9,221 studies were retained for title and abstract screening. Following title and abstract screening, 279 studies were moved on to full-text screening and full texts were sourced. Full-text screening of publications found in the main search (excluding 15 full-text publications that were unable to be retrieved) produced 47 included publications. In addition to the main search, a grey literature search was carried out. This yielded an additional three results (all of which were academic studies). These studies are reported alongside the results from the main literature search, giving a total of 50 included studies.

Included studies were first coded and grouped by outcome domain. A second stage of analysis was then carried out to identify key determinants of Childminding experiences and outcomes. In this way, the identified determining factors emerged directly from the review findings, rather than being predetermined by the research team.

Finally, a critical appraisal of the included studies was conducted, using the 'Mixed Methods Appraisal Tool (MMAT)' (Hong et al., 2018), to assess the quality and reliability of the evidence. This involved examining the methods used in each study, the handling of confounders, and the completeness of data. Many studies were found to have limitations, such as not accounting for potential confounders or having incomplete data sets.

Findings

The review has identified four groups of determinants of Childminding experiences and outcomes, namely, child, caregiver, structural and pedagogical.

1. Child determinants

Several child level determinants emerged, such as sex, age, temperament and socioeconomic status. Boys were found to be more sensitive to frequent childcare changes and the age of entering Childminding, which was associated with poorer communication and social outcomes compared to girls. Child temperament was also found to play a significant role, with different temperaments associated with how children adapt to and benefit from Childminding participation.

The child's age and family economic status were also identified as determinants. Younger children and those from lower economic backgrounds tended to experience different outcomes compared to their older and more economically advantaged peers. Some evidence suggested the quality of emotional support was overall higher than the quality of educational support, especially for toddlers. This suggests a prioritisation of nurturing care and supportive interactions for this age group. Economic status influenced the quality of Childminding environments and the resources available.

2. Caregiver determinants

With regards to caregiver (childminder) determinants, caregivers with appropriate qualifications and ongoing, relevant, training were better equipped to provide high-quality care. This suggests that the specificity of training plays a crucial role in shaping interaction quality. This education appeared to enable them to manage stress and challenges effectively, further improving the Childminding environment.

The caregiver's sensitivity, passion, commitment, and genuine interest in the children were positively associated with enhanced experiences and outcomes. Caregivers who are motivated and engaged tend to create more nurturing and supportive environments.

3. Structural determinants

A range of structural factors, such as the frequency and duration of care and the numbers of adults and children in the setting were considered as potential determining factors. The impact of time spent in Childminding on children's outcomes was mixed. While some studies found no significant correlation between hours spent in Childminding and outcomes, others noted that spending more than two to three days a week in these settings could have a negative impact on long-term behavioural outcomes. Likewise, the age children begin to attend Childminding and the duration of care showed varied impacts. Later entry was linked to better play competence, while early full-time care had mixed effects on child behaviour and learning. Longer exposure to Childminding may enhance cognitive outcomes but it may also increase child social and behavioural issues, suggesting the importance of care quality and stability.

Lower adult-child ratios (i.e., fewer children per adult) generally lead to higher process quality and more individualised attention. However, their impact on overall quality varied, primarily affecting specific caregiver behaviours like tone and discipline. Larger groups were associated with fewer but better-planned activities and higher caregiver stress. Group size did not significantly affect infant-caregiver relationships but influenced caregiver stress levels. The mixed-age groups in Childminding settings were found to offer unique benefits and challenges. While they support diverse learning experiences, they can hinder activities like physical exercise due to varying age-related needs. Effective activity planning is essential to address these challenges.

Socioeconomic factors were reported as influencing Childminding quality. Childminders in wealthier, urban areas tended to engage more in planned activities compared to those in poorer or rural settings. Furthermore, stricter regulations, higher-cost settings and financial support were associated with enhanced quality in Childminding settings.

4. Pedagogical determinants

The types of activities and the nature of interactions between caregivers and children were significantly associated with positive experiences and outcomes for children. Frequent positive interactions, such as responsiveness and story reading, were linked to better language and social outcomes. Conversely, negative interactions and a lack of engagement were associated with poorer outcomes.

Inclusive practices that cater to children with diverse needs are essential for maintaining high-quality environments. However, these practices were also found to pose challenges, as inclusive providers may struggle to maintain quality due to the complexities involved in caring for children with diverse needs .

The physical environment, including space, furnishings, and noise levels, may also impact children's experiences. Well-structured and inclusive environments that minimise noise and offer diverse learning opportunities were found to contribute to better outcomes.

Conclusions

The findings of this comprehensive review underscore the complexity of factors influencing the experiences and outcomes of children in Childminding. The evidence reviewed, whilst not without its limitations and weaknesses, suggests that by focussing on child-centred approaches, supporting caregiver well-being, improving structural and financial conditions, and fostering playful pedagogical practices, policymakers and practitioners can enhance the quality of Childminding services. The available evidence suggests these efforts may contribute to children receiving the support they need to thrive in home-based Early Years and School Age Care environments.



1. Introduction - Determinants of experiences and outcomes in Childminding

1.1. Introduction

Childminding, internationally referred to as “home-based childcare”, “family childcare” or “family day care”, serves as a widely adopted and vital service utilised by parents and families to fulfil childcare needs and facilitate parental employment (Ang and Tabu, 2018). However, research on Childminding has historically been limited, hindering a comprehensive understanding of the determinants of positive experiences and outcomes for children in these settings.

In Ireland, the *National Action Plan for Childminding 2021-2028* (DCEDIY, 2021) defines Childminding as paid, non-relative care of children aged from birth to 14 (including both early learning and care and school-age childcare) in which children are cared for within the childminder’s family setting. Childminding is recognised as “home-based” care, it distinctly differs from both “centre-based” care and care taking place in the child’s home, performed by a nanny, an au pair, or a babysitter. The umbrella term “home-based childcare” (Childminding) encompasses various practices, with caregivers offering services in their own homes to diverse age groups, including infants, toddlers, preschool, and school-age children (Ang, Brooker, and Stephen, 2017). In this way, the nature of the Childminding settings differs considerably from centre-based Early Years and School Age Care in that some children will remain with the same childminder from infancy through to adolescence and sibling groups can be cared for together.

According to the Central Statistics Office (n.d.), approximately 53,000 children in Ireland were cared for in a childminder’s home in 2022 (16 per cent of the 331,783 children under the age of 15 in some form of childcare). The *National Action Plan for Childminding* (DCEDIY, 2021) seeks to “set out steps towards regulation, support and subsidies, for all paid, non-relative childminders”. The Action Plan will involve change and significant benefits for childminders, who currently operate largely exempt from existing regulations, and for the children and families using their services. With the plan aiming to provide greater recognition for Childminding, additional support for childminders, and increased availability of flexible and affordable Early Years and School Age Care for working parents, it marks a crucial step toward acknowledging and enhancing the role of childminders in Ireland (DCEDIY, 2021).

With this significant policy advancement, the need to understand the determinants of positive experiences and outcomes for children in Childminding settings is more pressing than ever. Children’s access to and participation in quality childcare and educational environments has long been recognised as a pivotal determinant of positive long-term outcomes (UNESCO, 2014). Childminding constitutes a crucial component of Early Years and School Age Care (OECD, 2012) and is a consistently popular choice for working parents. Operating in small groups, childminders can offer flexibility, security, and unique learning experiences for children, thereby playing a crucial role in providing Early Years and School Age Care in a home-like environment (Glencross et al., 2021).

Childminding presents unique benefits that remain underexplored. A comprehensive literature review is imperative to fill existing gaps in understanding Childminding practices and the determinants of positive experiences and outcomes for children in these settings. The

diverse nature of Childminding settings, the nuances in caregiver-child relationships, and the potential variations in outcomes necessitate a synthesised examination of existing research. Undertaking such a review will provide the opportunity to inform Early Years and School Age Care practices and policies in order to enhance the quality of this provision and encourage optimal developmental outcomes for children in these unique home-based settings.

The practice of home-based childcare and the regulatory, social and cultural contexts in which it operates vary widely between different countries, as does the terminology used to refer to this type of setting. This review recognises and reflects this diversity by retaining the terminology used in each included study. In general discussion, the term Childminding is used as an overarching term.

2. Methodology

This review provides an international scope and critical evaluation of the research evidence on the determinants of experiences and outcomes for babies, toddlers, preschool children, children in later childhood, and young people (from birth to age 15 years) who participate in Childminding services.

The present review uses a “rapid review” methodology. Rapid reviews form part of the “systematic review” family, which constitute the ‘gold standard in knowledge synthesis’ (Khangura et al., 2012), and are “being used with increasing frequency to support clinical and policy decisions” (King, Stevens, Nussbaumer-Streit et al., 2022). Systematic reviews are designed to “identify, appraise and synthesise all the empirical evidence that meets pre-specified eligibility criteria to answer a specific research question ... [using] explicit, systematic methods that are selected with a view aimed at minimising bias, to produce more reliable findings to inform decision making” (Cochrane, ND).

While full systematic reviews are a time- and resource-intensive undertaking, rapid reviews retain the rigorous and systematic nature of the review process but are “accelerated through streamlining or omitting specific methods” (Cochrane, ND) and are thus designed to be completed in a relatively short timeframe without compromising on the systematic character of their approach (Moons et al., 2021).

The review methodology was informed by the Campbell Collaboration policies and guidelines for systematic reviews (Campbell Collaboration, 2019) and follows the MECCIR Methodological Expectations for Campbell Collaboration Intervention Reviews on conduct and reporting. Adjustments to the methodology were made based on Cochrane guidance on rapid reviews (Garrity et al., 2020).

2.1. Procedure

2.1.1. Search strategy

Search terms for the key concepts “Childminding”, “outcomes” and “experiences” were developed through term harvesting from a set of known articles, database thesauri, brainstorming by the research team and consultation with the advisory group. These included “outcome*”, “experienc*”, “impact*”, “effect*”, “influenc*”, “home-based childcare”, “home-based daycare”, “home childcare”, “home care”, “family daycare” and “childmind*”. In consultation with the advisory group, it was decided to add the search terms “ECEC” and “school-age childcare”, “afterschool” and “out-of-school care and recreation” to the proposed search strings, and to remove “home care” due to its associations with elderly care. Trial searches showed that the term “family care” resulted in a large number of search results on elderly care and care of persons with chronic illnesses or disabilities, as well as relevant results on Childminding. To mitigate this, search strings were further refined to exclude some of these irrelevant results. A sample search string is provided in Appendix 1.

Search strings were adapted to match the conventions and functionality of each database. Titles and abstracts were searched and searches were not restricted by date or language. Searches were carried out between 14 and 21 February 2024 across the following databases covering the disciplines of education, social policy, psychology, and sociology:

- APA PsychINFO
- British Education Index
- Bloomsbury Education and Childhood Studies
- Child Development and Adolescent Studies
- Digital Education Research Archive (DERA) - UCL

- DOAJ (Directory of Open Access Journals)
- EBSCO Education source
- EBSCO Teacher Reference Centre
- Education Resources Information Centre (ERIC)
- ProQuest Education
- SAGE Premier Journals
- Taylor & Francis Educational Database
- WorldCat

The initial search produced 13,062 results. After removing duplicates, 9,221 studies were retained for title and abstract screening.

2.1.2. Screening and data extraction

Covidence, a digital screening and data extraction tool for conducting systematic reviews, was used throughout the screening and data extraction process. Screening was carried out in two stages – title and abstract screening, and full-text screening – to exclude ineligible publications.

Screening tools, detailing inclusion and exclusion criteria for each stage of the screening process, were developed (see Appendix 2). Due to the large number of results, title and abstract screening was carried out independently by two reviewers on a random sample of 2000 publications, with disagreements resolved by consensus. There were 186 disagreements, resulting in a Cohen's Kappa score of 0.29, which indicates "fair" inter-rater agreement. The vast majority of disagreements resulted from a conservative approach to screening and these publications were mostly excluded upon discussion. This suggests that inter-rater differences were unlikely to result in inadvertent exclusion of relevant publications that should have been included. The remaining publications were split equally between the two reviewers.

Following title and abstract screening, **279** studies were moved on to full-text screening and full texts were sourced. Fifteen full texts could not be sourced. A full-text screening tool was piloted by three reviewers on a sub-set of ten randomly chosen publications. As a Cohen's Kappa score cannot be calculated if the number of reviewers exceeds 2, inter-rater reliability was assessed using the alternative measure Randolph's free-marginal multi-rater kappa. The Randolph's kappa score was 0.33, indicating poor agreement. Upon discussion, it emerged that definitions of Childminding required clarification and that unclear wording (such as "home care" referring to parental care) within screened publications had caused confusion. Again, disagreements were overwhelmingly erring on the side of inclusion. All studies included by a single reviewer at full-text screening stage were screened again by a second reviewer.

Full-text screening of publications found in the main search (excluding the fifteen full text publications that were unable to be retrieved) produced 47 included publications.

In addition to the main search, a grey literature search was carried out on Google, Barnardos Ireland, and Barnardos Aotearoa. The first page of search results was initially screened based on the information displayed on the search result page. This produced thirteen potentially relevant results, including additional academic publications and grey literature. After full-text screening, three of these results (all of which were academic studies) met the inclusion criteria. These studies are reported alongside the results from the main literature search.

The screening and study selection process is documented below, based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) convention:

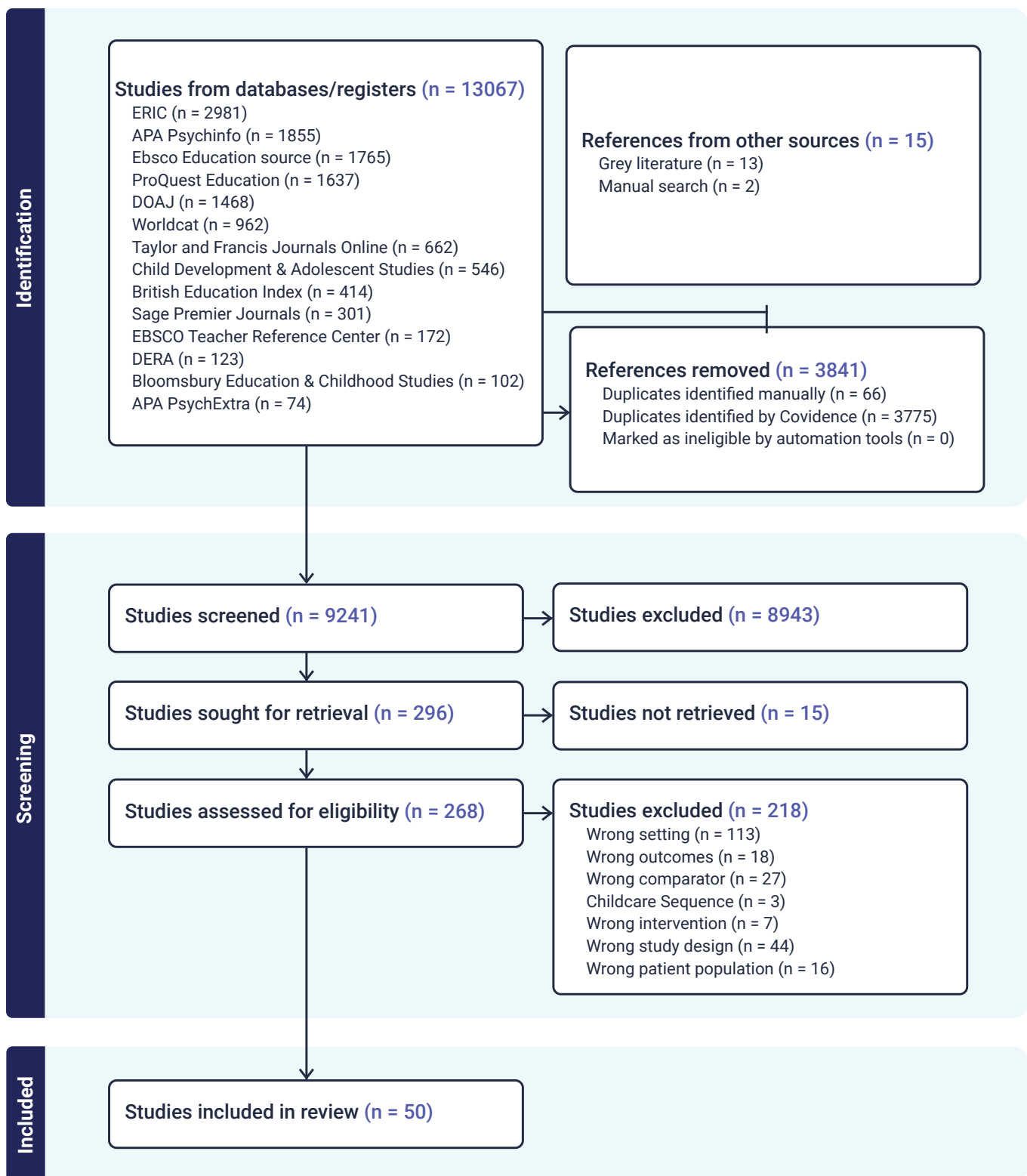


Figure 1 Screening and selection process

2.1.3. Data extraction

A data extraction tool was developed and can be viewed in Appendix 3. This tool provided a framework for analysing, summarising and interpreting the body of evidence gathered through this rapid review process. Four reviewers were trained in using the data extraction tool and contributed to data extraction. Data from each study was extracted by one reviewer and verified during write-up.

2.1.4. Analytical approach

Included studies were coded and grouped by outcome domain into six groups: quality of care, language and communication outcomes, socio-emotional outcomes, behavioural outcomes, health and wellbeing outcomes and cognitive outcomes. As several studies measured outcomes in a range of domains, these groups overlap.

A second stage of analysis was carried out on the six groups of outcomes and experiences to identify key determinants. The results were coded and grouped into child determinants, caregiver determinants, structural determinants, and pedagogical determinants. The weight of evidence for each determining factor was considered, based on the number of relevant included studies. In this way, the identified determining factors emerged directly from the review findings, rather than being predetermined by the research team.

3. Quality Appraisal

Before reporting the findings of the quality appraisal, general caveats need to be addressed. While the review aimed to identify “determinants” of outcomes and experiences in Childminding settings, the majority of studies included in this review do not meet the methodological requirements or present the necessary evidence for establishing a causal relationship between child, caregiver or setting factors and children’s outcomes or experiences. Rather, these studies reported “statistically significant associations” between two variables (such as quality of carer-child interactions and observed stress in children).

In statistics, an “association” refers to a relationship or connection between two variables, where changes in one variable are related to changes in the other. A “statistically significant association” means that the relationship or link observed between two variables is unlikely to be due to chance. Importantly, however, the presence of a statistically significant association between two variables does not necessarily imply that one *causes* the other¹. According to the Bradford Hill criteria (Hill 1965), a causal relationship is more likely if studies find a very strong effect that is consistent across similar studies and is not known to also be caused by other factors, the causal relationship is plausible based on what is already known, and the cause occurred before the outcome. A “dose-response relationship” (e.g. more hours in a Childminding setting are associated with a stronger effect than fewer hours) also favours a causal interpretation. To determine that an association really is causal, experimental study designs, such as randomised controlled trials, are required. These were rare among the studies included in this review.

Equally, in many of the studies included in this review, it is not possible to clearly establish the direction of any potential causal relationship. In some cases, only one direction makes sense, but in other cases the relationship might plausibly operate in either of two directions. For example, children’s challenging behaviour might cause a caregiver to become more stressed, but it is equally plausible that children behave in more challenging ways if their caregiver is feeling stressed (e.g. because the caregiver becomes less responsive under stress). Findings from this review and from the studies reported here therefore need to be interpreted with care.

3.1. Mixed Methods Appraisal Tool

Given the various methodologies included in this rapid review, the ‘Mixed Methods Appraisal Tool (MMAT)’ (Hong et al., 2018) was used to appraise the quality of the included studies. The MMAT is designed to appraise the methodological quality of five categories of empirical studies: qualitative research, randomised controlled trials, non-randomised studies, quantitative descriptive studies, and mix methods studies.

The tool asks five questions (dependent on study design). For quantitative, non-randomised studies, the most common type of study in this review, these questions are:

- Are the participants representative of the target population?
- Are measurements appropriate regarding both the outcome and intervention (or exposure)?
- Are there complete outcome data?
- Are the confounders accounted for in the design and analysis?²
- During the study period, is the intervention administered (or exposure occurred) as intended?³

¹ A commonly used example states that ice cream sales are significantly associated with the number of sunburns. However, it is clear that neither factor causes the other – rather, both are causally associated with sunshine.

² Confounders are factors that predict both the outcome of interest and the exposure. They can “distort the interpretation of findings and need to be considered in the design and analysis of a non-randomized study” (Hong et al., 2018).

³ This question was not relevant to the quantitative, non-randomised studies included in the review, most of which were not intervention studies.

Each publication is appraised by responding “yes”, “no” or “can’t tell” (if the necessary information is not reported in the publication) and reasons are recorded for each appraisal decision. Details for each study are included in Appendix 5. Most studies were published in peer-reviewed journals⁴. Below, appraisal results are synthesised in a discussion of key methodological challenges affecting the studies included in this review.

3.1.1. Are participants representative of the target population?

The vast majority of studies included in this review use samples that are either not representative of the general population or report insufficient information on sampling procedures and sample composition to assess whether (and how) participants were different from or similar to the general population. For most of these studies, it is very likely that participants were not representative of the wider population. This problem is particularly common in observational studies, which depend on participants consenting to taking part, in longitudinal studies, where data are collected at different points in time, and in studies that use multiple informants (such as caregivers, teachers, and parents) to collect data on children’s development.

Some of the studies included in this review reported that participants who agreed to observation, or who continued to take part over time, differed from those who declined or dropped out. For example, Dowsett, Huston, Imes, and Gennetian (2008) reported that the original sample of families in their large-scale longitudinal study in the USA did not differ from the wider population in the area. However, over time, families dropping out of the study were “significantly more likely to be low-income, African American, single parent families, with lower levels of maternal education relative to those who remained in the study” (p. 73). In the same study, observations of quality, carer-child interactions, and child behaviour in Early Years and School Age Care settings were only possible for a proportion of eligible settings, due to caregiver or parent refusal or scheduling conflicts. Unobserved children were more likely to come from poorer homes with lower maternal education than those who were observed.

Dettling, Parker, Lane, Sebanc, and Gunnar (2000) reported difficulties recruiting sufficient participants for their study of associations between child cortisol levels and quality of care and child temperament. They argued that home-based Early Years and School Age Care providers and parents disliked the idea of a home visit and that home visits and saliva sampling routines interfered with families’ weekend schedules. They concluded that “the use of licensed childcare and our visit to the childcare likely biased the sample towards higher quality home-based childcare settings” (p. 823).

Also using a longitudinal design Barnes, Leach, Malmberg, Stein, and Sylva (2009) measured behavioural outcomes and social competence by maternal questionnaire. The authors reported that their initial sample (1201 infants and their mothers) was representative of the local area, but 14 per cent of mothers did not return the behavioural assessment questionnaire at 36 months. They found that respondents differed significantly from non-respondents, who were “younger, the family had a lower SES/education score, they had more adverse home conditions and more neighbourhood deprivation. [Non-respondents] were observed to be less sensitive (10 & 18 months) and less warm and stimulating (36 months) and home environment quality was lower at 36 months” (p. 6).

⁴ It is good practice for research reports to undergo peer review. However, neither is peer review a guarantee of quality, nor are studies that were not peer-reviewed necessarily less rigorous. Grey literature, such as research reports published by charities or university departments, are often not peer reviewed. It is not always possible to determine whether a piece of grey literature was peer-reviewed. For this reason, lack of peer-review was not an exclusion criterion in this review.

In some cases, study inclusion criteria already skew the sample towards certain social groups and exclude others. For example, Clarke-Stewart (1986, p. 34) only included “two-parent, English-speaking families who were not on welfare and who did not live in areas of Chicago in which it was dangerous for observers to travel at night”. Families were recruited through churches, doctors, a mailing list, and a childcare referral network, which further skewed the sample towards those who could be reached through these channels. Willingness to participate added to this effect. The authors reported that, as a result of these factors, “the final sample consisted of families who were predominantly white (12 per cent were Black, 2 per cent Asian, and 1 per cent Hispanic) and of middle- and professional-class status (about one-quarter were of lower social status)” (ibid.).

Sometimes, practical considerations restrict whose data is gathered. For example, Iruka and Forry (2018) used a large, nationally representative sample of children to examine links between Early Years and School Age Care quality and children’s early outcomes. Chinese children, Other Asian and Pacific Islander children, American Indian and Alaska Native children, twins, and children born with low and very low birth weight were oversampled to make up for higher drop-out rates in these populations. However, the study excluded children born to mothers less than 15 years of age. Furthermore, direct cognitive assessments were only carried out with children who understood English or Spanish.

These are important imbalances, considering the well-established adverse effects of low family socio-economic status and childhood adversity on a host of child outcomes, including behavioural difficulties, mental health, temperament, physical health, language, cognitive, and socio-emotional development, among others (American Psychological Association, n.d.). As reported in this review, links have also been found between family socio-economic status and the quality-of-care children experience. In some countries, such as the USA, Childminding is a comparatively low-cost type of Early Years and School Age Care frequently chosen by less affluent parents (Dowsett et al., 2008), yet the studies included in this review shed relatively little light on the experiences and outcomes of some of the most vulnerable children participating in Childminding.

3.1.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?

With very few exceptions, the majority of studies included in this review used well-established measures of Early Years and School Age Care quality and child outcomes, which have been shown to be reliable and valid.

Challenges arose in some studies of children’s salivary cortisol, where sample collection methods used may have affected measurements. For example, in most of these studies, home samples were collected by parents and samples in settings were taken by caregivers. Sampling protocols restricted food and drink intake, as well as sleep prior to sampling, which may have been difficult to accommodate (see also Dettling et al., 2000, discussed above on participant recruitment challenges). While researchers took care to minimise departures from sampling protocols, some uncertainty remains whether all samples were taken according to protocol.

Averdijk, Ribeaud, and Eisner (2022) measured delinquency and substance use (from age 13), as well as peer aggression (“bullying”) (from age 11) by self-report. In addition, teachers were questioned on participating youths’ deviant behaviour, including truancy, assault with injury, carrying a knife or weapon, using threats to get something, smoking cigarettes, drinking alcohol, and taking illegal drugs. Official delinquency records between ages 10 and 17 were also consulted for 97 per cent of participating youths at age 17, who provided consent. While the authors made great efforts to create as complete a picture as possible, the stigma attached to delinquency, substance use and bullying means that these behaviours were likely underreported.

Hooper (2018) measured the frequency of planned learning activities and hours spent planning children's activities through a questionnaire distributed to home-based providers. Providers were asked to report "how many days in the week prior they had implemented planned learning activities" and "how many hours on [average] they spend each week planning children's activities" (p. 754). Retrospective recall of activities that may not have been recorded at the time can be difficult, and estimates of average time spent on planning are likely to contain inaccuracies.

3.1.3. Are there complete outcome data?

Incomplete outcome data affected many studies in this review. Statistical procedures can be used to estimate ("impute") missing data and to gauge the effect estimated data have on the outcome of the analysis, but this is not always done.

In longitudinal studies, participation rates often vary throughout the duration of the study as participants miss appointments or drop out entirely. For example, Averdijk et al. (2022) measured behavioural outcomes yearly between ages 7 and 17, as well as at age 20, using computer-assisted interviews and written questionnaires and including reports from parents, children/youths, and teachers. Child/youth participation rates fluctuated between 68.5 per cent (age 11) and 86.4 per cent (age 15) of the target sample. Parent and teacher (except at ages 13 and 15) participation rates declined over time. The authors reported that participants from some immigrant backgrounds were more likely to drop out than other participants. Missing data were handled within the statistical analysis model.

Missing data are also common in multi-informant studies and in studies where data are collected by participating parents or caregivers, rather than directly by researchers. For example, Groeneveld, Gerarda, Vermeer, van Ijzendoorn, and Linting (2010) relied on parents to collect saliva samples at home (caregivers collected samples in the Childminding setting during the observation day, so presumably at least the first sample under supervision). 12 per cent of home saliva samples were not posted back and 18 per cent of samples received did not contain enough saliva for analysis. In total, only 66 children (56.9 per cent) across home- and centre-based settings had complete home and childcare sample sets (missing data were imputed for children who had no more than one missing sample). In comparison, in Dettling et al. (2000), who sent a researcher to collect home and Childminding samples, only 8.5 per cent of saliva samples in the home-based care group were unusable.

For several studies included in this review, it was impossible to determine whether data were complete due to lack of information. These studies also did not report how they handled any missing data.

3.1.4. Are the confounders accounted for in the design and analysis?

Confounding occurs when a third factor influences both exposure and outcome, leading to a misinterpretation of the relationship between them. For example, a study might examine the impact of a reading intervention on preschoolers' language development but fail to account for socio-economic status, which also affects language skills. If children from higher socio-economic backgrounds are more likely to take part in the pilot programme (for example, because the intervention group contains childminders in relatively more affluent areas than the control group) and also have better language skills due to their socio-economic background, socio-economic status becomes a confounding variable. Thus, it may falsely appear that the reading intervention alone impacts language development when, in reality, socio-economic status is playing a significant role. Addressing confounding requires careful study design and statistical techniques like stratification or regression to control for these extraneous variables and reveal the true effects of the intervention or factor studied.

Identifying potential confounders requires a comprehensive understanding of the research context and potential variables that could influence the outcome of interest and can also be done by examining relationships between variables measured in the study. It is often not possible to identify all potential confounders. However, it is good practice to address known confounders in study design and analysis.

Several studies included in this review did not clearly account for potential confounders. For example, Clarke-Stewart (1986) reported correlations between a host of observed factors and child outcomes but did not explore relationships between these factors, some of which may act as confounders. Likewise, Leach, Barnes, Malmberg, Sylva, and Stein (2008) reported correlations between structural indicators and Early Years and School Age Care quality but did not explore potential confounders, as did Kerr, Kelly, Hammersley, Norman, Hernandez, Furber, Vuong, Wardle, Ryan, and Okely (2022) in their assessment of factors associated with feeding practices and mealtime environments.

Summary of the Quality Appraisal

The quality appraisal of the studies included in this rapid review highlights critical shortcomings across various study designs. With the intended function of assessing methodological rigour, the appraisal reveals some deficiencies in participant representation, appropriateness of employed measures, completeness of outcome data, and consideration of confounders. These deficiencies may have impacted on the generalisability, reliability, and validity of the findings. This critical appraisal underscores the value of identifying methodological limitations and emphasises the need for quality research practices to continue to develop an evidence base regarding factors that determine positive experiences and outcomes for babies, toddlers, children, and young people in Childminding.

4. Results

The findings from the included studies will be presented below. To begin with, an overview and descriptive statistics will be presented. Following this, each study will be discussed in turn, under six outcome domains: namely, quality of care, language and communication outcomes, socio-emotional outcomes, behavioural outcomes, health and wellbeing outcomes and cognitive outcomes. Where the findings of a study relate to more than one domain, the relevant findings will be discussed under each domain, with contextual study information being provided in the first, relevant, domain.

Descriptive statistics on the included studies are presented in Table 1, below. More than half of the studies included in this review were conducted in the United States, with the remaining studies covering a wide range of (mostly English-speaking) countries.

In terms of age groups, most of the included studies focused on the experiences and outcomes of infants, toddlers, and pre-school-age children, while school-age children were included in a smaller number of studies. The search did not produce any eligible studies on the experiences and outcomes of young people (post-primary school age) taking part in Childminding.

Half of the studies included in the review covered more than one age group (e.g. toddlers and pre-school age children). In most of these studies, data were not disaggregated by age group.

Table 1 - Study countries and age groups

Number of studies per country		Number of studies covering different age groups (at exposure)	
Study country	N	Age group	N
USA	28	Infants	21
Netherlands	5	Toddlers	31
Australia	4	Pre-schoolers	27
Canada	4	School-age	4
United Kingdom	3	Young people	0
Ireland	2	Unclear	6
New Zealand	2		
Belgium	1	Study covers single age group	19
Switzerland	1	Study covers more than one age group	25
Japan	1		

4.1. Which factors affect children's experiences and quality of care?

Children's experiences and the quality of care in Childminding are well researched, with 30 qualitative and quantitative studies included in this review addressing these areas. For the purpose of this review "experiences" include process quality indicators (such as the quality of caregiver interactions), structural indicators (such as adult-child ratios), types of activities, and children's preferences and dislikes. Factors that affect children's wellbeing (e.g. stress), are reported separately. Many of these studies are observational in character and employ well established measures of process quality (such as the Family Day Care Rating Scale (Harms & Clifford, 1980) or the Caregiver Interaction Scale (Arnett, 1989)), while others use ethnographic methods to explore everyday experiences in Childminding.

The details and findings of each of the 30 studies can be seen below.

4.1.1. Wright (2004)

Wright (2004) conducted a small-scale ethnographic study of two exemplary Childminding settings in urban New Zealand, using audiotape recordings, digital-camera photographs, written field notes, and semi-structured interviews with providers to “provide a rich description of the everyday experiences of the children in these settings as a starting point from which to deepen understandings of the nature of home-based settings as early childhood education curriculum sites and to widen perceptions beyond the dominant notions of early childhood education provision” (p. 9). The study identified four characteristic features that shape children’s experiences in home-based care: 1) use of dynamic, multiple sites (the home and community spaces, such as parks, libraries etc.), which allow for physical activity, connections with children’s families, positive experiences related to travel, and opportunities to connect with children’s interests; 2) the “personal” flavour of the educator’s home as a site, which allows for a deeper and more personal understanding of the educator’s (and child’s) person (and thus deepened relationships), close contact with members of the educator’s family, and engagement with the educator’s personal interests (e.g. music, gardening, cars, and being physical); 3) the omnipresence of a single educator, combined with a small group size and the dynamics of children coming and going, which allows for deeper relationships between educator and children, increased understanding of each child, and intensive exploration of children’s interests; and 4) everyday occurrences and contextually relevant tools, which allow children to engage in enquiry and be curious and creative within a social context and using resources and engaging in practices beyond the “educational” equipment and activities usually available in centre-based settings.

4.1.2. O’Regan, Halpenny and Hayes (2021)

O’Regan, Halpenny and Hayes (2021) conducted a mixed-methods study of pedagogy in Irish Childminding settings, using semi-structured interviews, a survey, photography, and field notes. The authors found that participating childminders subscribed to a cultural model of pedagogy which they termed “Real Life Learning”, whose “primary goal is to explore learning opportunities presented by real life experiences as they arise ... The childminder prioritises relationship-driven, child-led learning mediated through everyday experiences both in an enriched home environment and out in the community”. Within this model, a number of factors shape children’s experiences: 1) “Relationship-driven learning”, where childminders get to know each child “inside-out”, which fosters child-led activities and also allows children to benefit from the caregiver’s particular interests; 2) “Learning from everyday experiences” provides a rich array of experiences that cater for children’s individual needs, interests, preferences, and capabilities; 3) “Mixed-age groups” facilitate peer learning between children of different ages, in particular empathy and responsibility towards younger children, translating and explaining knowledge, and copying older children’s activities; 4) “Enriched home learning environments” provide everyday tools as well as educational materials and outdoor spaces that provide rich sensorial experiences, including opportunities for physically active, unstructured outdoor play, gardening and exploration of the natural environment; 5) “Outings in the community” are a routine feature of Childminding that fosters belonging, familiarity, and identification with the wider community; 6) The “home from home environment” is a relaxing space, which also offers plentiful opportunities for expanding and enhancing children’s learning through cooking and baking, household chores, as well as afterschool activities, such as swimming, football, or dancing.

4.1.3. Ang and Tabu (2018)

Ang and Tabu (2018) examined how home-based practitioners in England and Japan support the care and education of children, how practitioners’ perceptions of quality care and education shape their practices and what kind of experiences young children have in home-based

settings. Five settings (two in England and three in Japan) took part in the qualitative study, which used caregiver interviews, observations, and documentary analysis of journal diaries and children's activity records. Children in Japan were up to two years old, while children in England were up to eight years old. The authors identified "a distinct pedagogy in supporting young children's learning" as a key feature of home-based childcare. This pedagogy encourages social interactions and learning in a mixed age group, takes children's interests into account in planning a varied, flexible programme of activities, and engages children in their local culture and community.

4.1.4. Iruka and Forry (2018)

Iruka and Forry (2018) used data from a large-scale longitudinal study of children born in 2001 in the United States to examine patterns and indicators of childcare quality at 36 months of age. The sample included 350 children attending family childcare programmes (as well as further children in centre-based care), who were observed in their childcare setting. The authors found that family childcare homes could be divided, based on quality, into four patterns: (a) Very Low Process Quality with Infrequent Academic Activities, (b) Low Process Quality with Infrequent Academic Activities, (c) Minimal Process Quality with Infrequent Academic Activities, and (d) Good Process Quality with Weekly Academic Activities. Caregiver education level was the only significant predictor of quality patterns, with caregivers in the highest quality group having more education than those in other groups. Other caregiver characteristics, including caregiver age, experience, satisfaction, or motivation, or programme characteristics, including classroom size, percentage of non-English speaking children and proportion of children with special needs, were not significant predictors of quality.

4.1.5. Rusby, Backen Jones, Crowley, and Smolkowski (2013)

Rusby et al. (2013) investigated whether caregiver stress was associated with the quality of caregiver practices and caregivers' tolerance for challenging child behaviours. They also examined whether working conditions were associated with caregiver stress. The researchers questioned 155 registered and certified home-based childcare providers (98 per cent female, 64 per cent Caucasian) in disadvantaged neighbourhoods of Oregon, USA about their levels of stress and observed their interactions with children. The study found that greater caregiver stress was significantly associated with less frequently observed positive attention ($p < .05$) and lower caregiver-reported tolerance for challenging behaviours ($p < .01$). They also found that caregivers were more stressed if they worked in isolation. The number of children per adult was not related to stress levels once working in isolation, low use of positive attention, density of challenging behaviours and low tolerance for challenging behaviours were taken into account, nor were number of hours worked, or observed caregiver negative attention, positive interactions with children or responsiveness to children.

4.1.6. NICHD (2004)

A study by the National Institute of Child Health and Human Development (NICHD) (2004) in the USA, based on the NICHD dataset, found that total hours spent in childcare homes throughout the first 54 months of life were significantly related to quality of care: children who spent more time in childcare homes tended to experience lower-quality care than children who spent fewer total hours in these settings. Time spent in Childminding was a stronger negative predictor of quality of care in infancy than during toddler or preschool years.

4.1.7. Schaack, Le and Setodji (2017)

Schaack, Le and Setodji (2017) used data from a longitudinal cohort study to explore the

relationship between home provider qualifications and the developmental outcomes of toddlers who attended regulated or unregulated paid family childcare in the US. Approximately 250 two-year-olds and their care providers (57 per cent licensed) were included in the study. Children's cognitive and socio-emotional skills were rated using standardised tools. The quality of care was also rated using two different observational measures (the Family Day Care Rating Scale (FDCRS), which measures global quality, and the Caregiver Interaction Scale (CIS), which measures the quality of interactions between the caregiver and the child. The authors found that caregiver qualifications had a significant impact on the quality of care ($p < .05$). However, the quality of caregiver-child interactions (caregivers' sensitivity, detachment, harshness, and permissiveness) did not depend on whether the caregiver had a higher degree or not, or whether any such degree was related to Early Childhood Education (ECE). For caregivers who did not have a higher education degree, however, any ECE-related coursework did improve programme quality ($p < .05$) and interactions – these carers were more sensitive, less detached, and less permissive (all at $p < .05$). Harshness was not related to ECE coursework.

4.1.8. McCabe, Peterson, Baker, Dumka, Brach, and Webb (2011)

McCabe et al. (2011) describe two home-visiting programmes designed to improve quality of care in home-based childcare in New York and report on outcomes from these interventions. The Caring for Quality programme (CFQ) programme targeted registered and license-exempt family childcare providers, who received two home visits per month for up to one year, during which the home visitor shared “visit plans and activities as well as resources for providers and home visitors on topics such as child development, health and safety, and nutrition”. Home visitors also “interacted with children and partnered with providers around a theme (e.g., dramatic play), provided related materials and a book, and offered support and ideas for implementing and extending the theme in between visits.” Seventy four providers completed the programme as part of a formal evaluation, with a further 23 providers on a waiting list acting as a control group. Both groups were observed and assessed at the start and end of the intervention period by researchers who were unaware which providers had completed the intervention and which had not. The evaluation found that the intervention had significantly increased global quality in participating settings (when compared with settings on the waitlist), especially in areas related to children's language and reasoning, learning activities, children's social development, and adult needs. Support for health and safety had little impact on practice, even after changes were made to the programme to address the issue at every visit. Home visitors observed that providers were better able to meet the needs of individual children post-intervention and had a greater understanding of the importance of play for young children's development and learning.

The second programme, Partners in Family Child Care (PFCC), offered individualised professional development services to group family childcare providers with the aim of improving their practices, especially in relation to children's literacy and social-emotional development. Participating providers received up to 10 months of intensive home visits, including home-visitor provider consultations and hands-on activities with children and providers. Home visitors also provided materials and a children's book to accompany the activity, curriculum materials, and supplementary materials, and supported providers in screening children for their general development and literacy skills. Eighty providers completed the programme and the findings reported in McCabe et al. (2011) are based on two thirds of these participants (data for the remaining third was not yet available). Participating providers were observed twice, at the beginning and end of the intervention, using measures of overall childcare quality and early literacy environment quality. Home visitor observations and provider interviews reported a positive impact on providers' use of developmentally appropriate practices to foster children's early literacy development. Several providers also made changes in their environment which helped children engage with language and literacy.

McCabe et al. (2011) also report data suggesting an impact on children's early literacy and overall development. However, as no control group was involved in this evaluation, it is impossible to establish whether these gains were due to the intervention or some other factor. For this reason, they are not included in this evidence review.

Both evaluations found that providers' "readiness for change" was an important predictor of programme success.

4.1.9. Gunnar, Kryzer, Van Ryzin, and Phillips (2010)

Gunnar et al. (2010), discussed in more detail below in relation to child behaviour, found significant differences in the quality-of-care pre-school aged boys and girls (3-4.5 years) received in home-based settings. Specifically, they observed that girls received more warm, supportive care than did boys ($p < .05$), but there were no significant child sex differences in "negative, intrusive care", as measured by the Observational Rating Scales of Caregiving Environment⁵.

4.1.10. Groeneveld and Gerarda (2010a) and Groeneveld, Gerarda, Vermeer, van Ijzendoorn, and Linting (2010b)

Groeneveld (2010a, 2010b) employed a cross-sectional study design to examine the role of caregiver stress, childcare quality and caregiver sensitivity in predicting toddlers' stress levels and wellbeing. Study participants were children and caregivers in centre-based and home-based childcare in the Netherlands. Children (71, 32 girls) were between 20 and 40 months of age and attended one of 55 childcare homes. The study found that higher global quality⁶ was significantly associated with more sensitive care ($p < .01$). It also found a negative association between caregivers' perceived stress levels and the quality of their behaviour towards the children in their care ($p < .05$): caregivers who felt more stressed showed lower-quality caregiving behaviour, but caregiver behaviour was not significantly associated with working hours, workload or with cortisol change throughout the workday.

4.1.11. Groeneveld, Gerarda, Vermeer, van IJzendoorn, and Linting (2016)

In a later study, Groeneveld et al. (2016) conducted a randomised controlled trial to test whether a video-feedback intervention aimed at increasing caregiver sensitivity had an effect on children's wellbeing in home-based childcare. 66 caregivers from 23 childcare homes and 66 randomly selected children (one from each childcare setting, 25 intervention group, 25 control group, 16 backup group) in rural and urban areas in the Netherlands took part in the study. 47 caregiver-child pairs completed the study. At the start of the intervention, children were between 6 and 42 months old (mean: 26 months). The authors found that, prior to the intervention, months spent with the caregiver and quality of care were significantly associated: caregivers were more sensitive to children who had joined their group more recently ($p < .05$), but global childcare quality was higher in settings where children had spent a longer period of time with that specific caregiver ($p < .01$). Global quality prior to the intervention was also positively associated with caregiver sensitivity after the intervention ($p < .01$), and global quality after the intervention was positively associated with caregiver sensitivity before the intervention ($p < .01$).

⁵ The authors did not clearly define "intrusive-overcontrolling care", but reported that "anecdotally, settings scoring high in intrusive, overcontrolling care were often ones in which the children were transitioned frequently between activities, were permitted relatively little time in free play, and spent long periods in provider-directed structured activities" (p. 863-864)

⁶ "Global quality" is a measure of stimulation and support in Early Learning and Care environments. It combines several elements, including organisation of the environment, learning materials, and variety of activities and environments.

4.1.12. Bigras, Bouchard, Cantin, Brunson, Coutu, Lemay, Tremblay, Japel, and Charron (2010)

Bigras et al. (2010) sought to identify structural variables associated with process quality in regulated centre- and family-based childcare settings serving children aged 18 months and younger in Montreal, Canada. Thirty six family-based settings (as well as additional centre-based settings) took part in the study. The authors found that a diploma in early childhood education ($p < .01$) and adult-child ratios ($p < .01$) were significantly associated with process quality ratings regardless of setting type.

4.1.13. Doherty, Forer, Lero, Goelman and LaGrange (2006)

Doherty et al. (2006) conducted a cross-sectional study to explore how provider level of general education, degree of intentionality, training and experience, use of support services and work environment affect quality in Canadian family childcare services. Quality ratings included measures of space and furnishings for care and learning, basic care, language and reasoning, learning activities, social development, and provision for adult needs (such as balancing family and caregiving responsibilities). Two hundred and thirty one family childcare providers took part in the study. The study found that intentionality was significantly associated with quality: providers who stated that they became regulated to meet standards ($p < .01$) and who enjoyed family childcare and would choose it again as a career ($p < .05$) had significantly higher quality ratings than other providers. However, providers who saw working with children and/or contributing to their development as a positive aspect of the job ($p < .05$) offered care of a significantly lower quality than other providers. Providers' highest college or university credential in ECE or a related discipline was also associated with quality, with providers with higher ECE-related degrees offering significantly ($p < .05$) better quality than providers with lower or no ECE-related training. Finally, the use of informal networking and of a library story hour predicted better quality care (both at $p < .05$). Level of general education, childcare training and work environment were not significantly associated with quality.

4.1.14. Hallam, Bargreen and Ridgley (2013)

Hallam, Bargreen and Ridgley (2013) used administrative data on the quality of family childcare programmes in Tennessee, USA, to examine whether caregiver education and training were related to global quality. Data on 1,145 family childcare providers were included in the dataset.

The study found that caregiver education was significantly related to the quality of space and furnishings ($p < .05$), of learning activities ($p < .001$), and to a composite score measuring overall quality ($p < .05$), with caregivers with a 2-year college degree scoring higher than those with a high school diploma. Caregivers with some college education also scored significantly higher than those with a high school diploma on the quality of learning activities. Caregiver education had no impact on the quality of basic care, social development, or language and reasoning activities.

Furthermore, any specialised early childhood training (whether through professional development or at degree level) was predictive of higher scores on measures of the quality of space and furnishings, learning activities, language and reasoning activities, and a composite score measuring overall quality (all $p < .001$). The quality of basic care was also higher ($p < .001$) if caregivers had received professional development training, compared to no early childhood training. Caregivers with professional development training in early childhood also scored higher on social development activities than those without any specialised training ($p < .01$).

4.1.15. Hooper (2018)

In a US-based study, Hooper (2018) explored whether provider, programme, and community characteristics were associated with instructional practices in home-based childcare. The study

used data from a national survey of listed and unlisted home-based childcare providers and included those providers in the analysis who were serving at least one child who was not yet in kindergarten (4,235,3806 listed). It was not possible to determine whether unlisted providers met the inclusion criteria for this literature review. Therefore, only findings on listed providers are reported. The study found that listed providers who cared for at least one unrelated child ($p < .01$), were located in a low-poverty community ($p < .01$) and were located in an urban-dense community (compared to rural) ($p < .01$) implemented planned learning activities more frequently and spent more time planning these activities than their counterparts. Providers who had more than 20 years of experience providing home-based childcare also implemented more learning activities than less experienced providers ($p < .05$). Finally, providers who looked after a larger number of children implemented fewer learning activities but spent more time planning them.

Provider education was also significantly related to frequency of learning activities and time spent planning (both $p < .01$), with providers who had some college credits or a degree in ECE or a related field scoring higher than those who had a high school diploma or less. However, a degree in a field not related to ECE did not make a difference to learning activities or time spent planning. Taking coursework and participating in workshops led to better scores on both outcomes, and meeting with others ($p < .05$) was associated with implementing more learning activities, but coaching did not improve either outcome.

Finally, providers' motivations and beliefs also mattered: career-related (rather than financial or convenience-based) motivations predicted more frequent learning activities ($p < .01$) and more time spent planning ($p < .05$), while a helping motivation was associated with more planned learning activities ($p < .01$), but not time spent planning. Providers who had more progressive beliefs about child rearing offered more planned learning activities than more traditional providers ($p < .05$), while those with more traditional beliefs spent more time planning ($p < .01$).

4.1.16. Horgan, O'Riordan, Martin, and O'Sullivan (2018)

On behalf of the Irish government, Horgan et al. (2018) consulted with primary school children on their "likes, dislikes, and opinions on the after-school care experience". The sample included 81 children aged 5 to 7 years and 96 children aged 8 to 12 years from primary schools across Ireland and the researchers employed a range of creative and age-appropriate methods to elicit their views. The authors found that children valued opportunities to socialise with friends, play and relax after school. Relationships with family, friends and caregivers were very important to the participating children, and eating and cooking were central activities for children in the after-school period. Children disliked structured environments with rules, being treated inappropriately for their age, and not being allowed to make their own choices about food.

4.1.17. Hughes-Belding, Hegland, Stein, Sideris and Bryant (2012)

Hughes-Belding et al. (2012) studied structural and belief characteristics of entry-level family childcare home providers and their impact on global quality, using a cross-sectional study design. Participating providers (257) were looking after at least one child aged between 20 and 50 months old and at least two children who were not their own, and worked for at least 20 hours/week. In addition, due to the study focus on entry-level providers, those with a bachelors' (or higher) degree in ECE or a related field were excluded. The study found that more professional development and more years of experience were associated with better quality care (teaching and interactions) ($p < .01$). Motivation was also related to quality on its own, but ceased to be so once other factors were taken into account. Child-rearing beliefs significantly predicted childcare quality even after structural differences were taken into account, with providers with more child-centred views scoring higher on global quality ($p < .01$) and caregiver sensitivity ($p < .001$). Finally, caregivers who were more stressed by their job were found to be significantly harsher in their tone and discipline ($p < .001$), as well as less sensitive

($p < .05$) in interactions with children than less stressed caregivers. Adult-child ratio, education and providers' own perceptions of their abilities were largely unrelated to quality, except for an association between ratios and harshness in tone and discipline (providers looking after more children per adult were harsher ($p < .05$)).

4.1.18. Kerr, Kelly, Hammersley, Norman, Hernandez, Furber, Vuong, Wardle, Ryan, and Okely (2022)

In a cross-sectional, observational study conducted in Australia, Kerr et al. (2022) examined factors associated with positive and negative feeding practices and mealtime environments in family day care services. Participants were "educators" in 33 family day care services in New South Wales (57 per cent English not main language, 45 per cent low socio-economic status area) caring for 104 children under the age of 5 (mean age 3.2 years). Positive practices examined included practices designed to support autonomy and encourage positive attitudes to food, and structural factors, such as sitting with children and involving them in food preparation, among others. Negative practices included coercive control (e.g. pressuring, bribing, punishing, or spoon-feeding children, among others) and structural items, such as presence of screen devices or engaging in other activities while children eat, among others. The researchers found that the educators observed typically did better on avoiding negative practices than on implementing positive practices. Sitting with children during the meal was the only positive practice meeting best-practice standards. Main language spoken at home, socioeconomic status, professional development related to nutrition in the past 2 years and years of experience providing Early Childhood Education and Care (ECEC) were not significantly related to feeding practices or mealtime environment.

4.1.19. Knoche, Peterson, Pope Edwards, and Jeon (2006)

Knoche et al. (2006) studied differences in observed quality and provider motivation between inclusive and non-inclusive childcare providers (home- and centre-based), as well as families' perceptions of quality and satisfaction with childcare services. Study participants were licensed and subsidy-receiving, centre- and home-based full-time childcare providers in Iowa, Kansas, Missouri, and Nebraska, serving children from birth through kindergarten age. Providers were classified as "inclusive" if they were caring for at least one child with a verified disability during the month of data collection. One hundred and thirty two family childcare providers (31 inclusive) took part in the study.

Among home-based providers, inclusive status was associated with the provider seeing their job as a "personal calling" ($p < .05$). However, inclusive home-based providers scored significantly lower on global quality than non-inclusive providers ($p < .10$). Inclusive home-based providers also scored lower on the quality of space and furnishings, and language and reasoning activities (both $p < .05$), than non-inclusive providers. The quality of basic care, learning activities, support for social development, and the quality of caregiver-child interactions did not differ significantly based on inclusion status.

4.1.20. Leach, Barnes, Malmberg, Sylva, and Stein (2008)

Leach et al. (2008) observed childcare in nurseries, grandparent care, nanny care, and Childminding settings and identified structural factors associated with the quality of care and interactions in different types of settings caring for infants and toddlers in the UK. The study included 85 childminders at 10 months and 83 childminders at 18 months. Cost of care was significantly (positively) associated with health and safety in Childminding settings when babies were 10 months old ($p < .05$). When toddlers were 18 months old, childminders with higher fees were significantly less punitive ($p < .05$), displayed more positive relationships ($p < .05$), and engaged in more responsive and sensitive interactions ($p < .01$) than providers charging lower fees.

4.1.21. Luchini et al (2017)

Luchini et al. (2017) used a provider survey in home- and centre-based settings to explore whether childcare providers' self-reported meal-time strategies depended on whether they perceived a child as a "picky eater". The sample included 11 home-based childcare provider-child dyads (as well as parents and additional participants in centre-based settings) in Illinois, USA. Children were aged between 3 and 5 years and did not have food allergies. The study found that home-based childcare providers' perceptions of a child's "pickiness" significantly affected which meal-time strategies they used. In particular, they were significantly more likely to report using negative feeding practices, such as spoon-feeding a child who could feed themselves or offering a reward for eating if they perceived the child to be a "picky eater" than if they did not perceive the child as "picky". Use of other positive and negative strategies, including withholding favourite foods as punishment, modelling positive eating behaviours, using rewards, and making the meal into a game, was not significantly associated with home-based providers' perceptions of children's "pickiness".

4.1.22. Maher, Frestedt and Grace (2008)

Maher, Frestedt and Grace (2008) examined differences in rural and non-rural childcare settings with regard to adult-child ratios, as well as relationships between cost of childcare, childcare subsidy receipt, and childcare quality for rural and non-rural areas. The study was cross sectional, and spanned five US states, using a large dataset collected through telephone interviews with "female guardians" of children aged birth to five years. The sample included 398 families using family childcare. The study found that ratios in family childcare did not differ significantly between rural and urban areas, with one exception: toddlers in rural areas were significantly more likely to experience lower child-adult ratios than toddlers in urban areas ($p < .001$), and the size of this effect increased with increasing parent-paid fees. Infants and preschoolers receiving childcare subsidies were significantly more likely to experience higher child-adult ratios than those who did not receive subsidies ($p < .01$). Children's age was significantly associated with ratios, with younger infants being significantly more likely to experience a lower adult-child ratio than older children ($p < .05$).

4.1.23. Raikes, Raikes and Wilcox (2005)

Using a provider survey, direct observation, and administrative data, Raikes, Raikes and Wilcox (2005) examined how policy-level (regulation and concentration of children in receipt of subsidies) and provider-level (level of education and annual training hours) factors relate to global quality and caregiver sensitivity in home-based childcare, on their own and together. 120 randomly selected licensed and registered family childcare providers who receive subsidies in four Midwestern US states participated in the study. The study found that more regulation ($p < .001$), lower subsidy density ($p < .001$), higher levels of provider education and more training hours were each, on their own, associated with higher global quality in family childcare homes. Furthermore, a lower concentration of children in receipt of subsidies ($p < .01$) and higher provider education predicted more sensitive caregiving, but regulations and training had no direct effect on sensitivity. However, regulation moderated the relation between education and caregiver sensitivity: in areas with few regulations, more educated providers displayed more sensitive caregiving than those with less education.

4.1.24. Riethmuller McKeen, Okely, Bell, and de Silva Sanigorski et al. (2009)

In a qualitative study of Australian early childhood settings, Riethmuller et al. (2009) used interviews, focus groups, site visits, and meeting observations to identify current physical activity practices, barriers to physical activity and methods by which effective professional development on physical activity practices could be delivered to family day care providers (as well as educators in other types of settings). The study sample included 44 family day care

providers from the City of Greater Geelong, Victoria, among other participants. Family day care providers taking part in the study highlighted that this type of childcare lacked requirements for minimum qualifications and physical activity curricula. They also noted that competing needs in mixed-age groups, typical of family day care, constituted a barrier to physical activity. Participants suggested that physical activity programmes designed for the sector should be simple and easy to implement, require minimal resources and time to set up, be versatile across age groups and suitable for use indoors and in small areas. Training should be practical and hands-on and be delivered in the evening.

4.1.25. Tang, Hallam, Francis, and Sheffler (2020)

Tang et al. (2020) explored relationships between Quality Rating and Improvement System (QRIS) supports and observed changes in global quality in family childcare in Delaware, USA. Supports included on-site technical assistance and grants and quality indicators measured included space and furnishings, listening and talking, activities, interactions, and programme structure. 139 listed and paid family childcare providers, who were receiving supports under the intervention and had been rated at least twice, were included in the sample. The study found significant relationships between several quality indicators, with services scoring high on one indicator often also scoring high on other quality indicators. Provider level of education or years licensed were not significantly related to any of the quality indicators. The evaluation also showed that QRIS supports had a positive impact on global quality in participating family childcare services. Specifically, the amount of on-site technical assistance was significantly associated with improvements in carer-child interactions ($p < .01$) and programme structure ($p < .05$). Grants were significantly associated with improvements in the home environment (space and furnishings) ($p < .05$).

4.1.26. Vandenbroeck, Slot and Hulpia (2021)

Vandenbroeck, Slot and Hulpia (2021) examined how structural aspects (including group size, supervision, and pre-service training) related to different dimensions of emotional and educational process quality in licensed family childcare for toddlers and infants in Flanders, Belgium. Process quality was measured through observation, using the CLASS infant and CLASS toddler tools. For infants, this tool measures the relational climate, teacher sensitivity, facilitated exploration, and language support. For toddlers, relational climate, teacher sensitivity, regard for the child's perspective, behaviour guidance, facilitation of learning, quality of feedback, and language modelling were measured. Two hundred family childcare providers (100 licenced, 100 licenced and affiliated with a professional organisation) took part in the study.

The study found that the quality of emotional support was overall higher than the quality of educational support, particularly for toddlers. Emotional and educational quality of care for toddlers and infants declined significantly ($p < .05$ or less) throughout the morning on all quality indicators, except for "relational climate" for infants, and "negative climate" for toddlers. The decline in behaviour guidance provided for toddlers was borderline significant at $p < .10$.

Quality also differed based on the type of activity babies and toddlers were engaged in. For babies, facilitated exploration ($p < .001$) and language support ($p < .05$) were highest during guided play, but lower during free play or during lunch and snack time. For toddlers, all quality indicators were significantly ($p < .05$ or less) associated with type of activity and highest during guided play, with the exception of "negative climate", which was lowest (best) during free play.

The study also found that different structural factors affected the quality of emotional and educational support but found differences between licenced providers and those who were licensed as well as affiliated with a professional organisation, and between providers caring mainly for babies or toddlers. For "affiliated" providers caring for babies, the amount of

supervision received was positively associated with significantly higher quality emotional and educational support ($p < .001$). However, years of experience was a negative predictor for this group, with more experienced providers offering significantly lower emotional support ($p < .001$).

A wider range of experiences offered (e.g. gross and fine motor play; construction play; creative and dramatic play; verbal and non-verbal dialogues; game play; cleaning and other household activities) was a borderline significant predictor of the quality of educational support among affiliated providers looking after babies ($p < .10$). Child group size or qualification in higher education were not significantly related to the quality of emotional or educational support in this group. Among affiliated providers looking after toddlers, only the type of activity predicted educational and emotional quality, with both being significantly lower during free play and eating times than structured play. Group size, supervision, higher education, years of experience, and the number of different experiences offered to toddlers were unrelated to either quality domain.

For licenced but unaffiliated providers looking after babies, higher education was associated with greater educational support ($p < .05$). Educational quality was significantly lower during meal and snack times than at other times of the day ($p < .05$). Group size, supervision, years of experience, and range of experiences offered to babies had no impact on quality for this group of providers. Licenced but unaffiliated providers looking after toddlers provided significantly ($p < .001$) lower quality during meal and snack times (educational and emotional) and free play (educational), but both types of quality benefitted from a wider range of experiences offered. Group size, supervision, higher education, and years of experience were not significantly related to quality in this group ($p < .05$).

4.1.27. Weaver (2002)

Using a cross-sectional study design, Weaver (2002) studied whether family childcare providers' formal education and training, college coursework, psychological wellbeing and family income were related to global quality and professional commitment. Sixty five licensed family childcare providers from a variety of urban and rural communities located in Dane County, Wisconsin, (97 per cent white, 98 per cent female, 89 per cent married) took part in the study (providers who didn't have a partner/spouse or had provided family childcare for less than one year were excluded). The study found that formal education ($p < .05$), college coursework or a degree in ECE ($p < .01$), participation in workshops and training ($p < .01$), psychological wellbeing ($p < .1$) and professional commitment ($p < .01$) were all significantly associated with quality of care in the expected direction (but carer depression was not, once other factors were taken into account). Family income and provider compensation were borderline significant predictors ($p < .10$). Training was the strongest predictor, followed by family income, psychological wellbeing, formal education, and college coursework or a degree in ECE. In particular, licenced providers who had a Child Development Associate (CDA) certificate (an "advanced training credential"), city or national accreditation, or both, offered care that was more developmentally enhancing care than providers who had only completed the required cumulative training.

4.1.28. Wylie, Thompson and Kerslake Hendricks (1996)

Wylie, Thompson and Kerslake Hendricks (1996) examined associations between 5-year-olds' competencies and home- and Early Childhood Education Services resources and quality, using a cross-sectional design. Children (aged 4.5 to 5 years) attending one of 25 family day care homes in the Wellington region (New Zealand) took part in the study (as well as further children attending other types of care settings). The study found that in family childcare homes, an increase in the child-staff ratio was associated with reduced quality of staff-child interactions ($p = 0.03$), but with increased scores in the self-esteem subscale rating ($p < .001$). This measure awarded higher scores if children's play activities were not gender-stereotyped, activities were

culturally inclusive, children supported each other and cooperated, and children were allowed to complete activities. Programme/activity quality ratings were not significantly associated with child-staff ratios. The study did not report disaggregated data on how these factors related to children's competencies in family day care homes.

4.1.29. Dowsett, Huston, Imes, and Gennetian (2008)

Dowsett et al. (2008) used data from the longitudinal NICHD cohort study, discussed above, to examine whether children from families of different income levels experience differences in structural and process quality of childcare. Quality was measured by observation at ages 2, 3, and 4.5 years. The authors found that children from higher-income families consistently experienced better-quality family-based childcare than their peers from lower-income homes and were more likely to avail of licensed (as opposed to unlicensed) home-based care. Family income predicted observed global quality ratings, the quality language stimulation and peer play, the amount of television watching, and safety precautions at different ages. High-income children consistently experienced the highest quality of care, while poor and near-poor children's experiences received the lowest ratings.

Summary of factors that affect quality of care:

As seen above, a considerable number of the included studies addressed the issue of quality in Childminding. These studies highlight several determining factors, particularly the significance of relationship-driven and adaptable approaches. Wright (2004) and O'Regan, Halpenny, and Hayes (2021) highlight the benefits of diverse activities, close relationships, and community engagement in New Zealand and Ireland, emphasising the importance of fostering social interactions and cultural connections within Childminding settings. Similarly, Ang and Tabu (2018) observe similar practices in England and Japan, advocating for social interactions and cultural engagement as essential components of high-quality Childminding provision. In the U.S., Iruka and Forry (2018) found that caregiver education levels significantly impact Childminding quality. Rusby et al. (2013) found childminder stress, particularly when experienced in isolation, diminished the quality of care provided, highlighting the need for support mechanisms for caregivers. Furthermore, Groeneveld et al (2010a, 2010b) found an association between higher global quality and more sensitive care, underscoring the complex interplay between childminder factors and care quality.

4.2. Which factors affect children's language and communication outcomes?

Four studies explored factors associated with language and communication outcomes in Childminding, including child sex (Bornstein and Hahn, 2007), childcare intensity, i.e., frequency and duration of care (Lim, Levickis and Eadie, 2022; Belsky et al., 2007), and childcare quality (Clarke-Stewart, 1986; Belsky et al., 2007). Studies on language and communication outcomes included in this study tended to examine the impact of childcare factors experienced in infancy or during toddlerhood on outcomes measured in pre-school and primary-school aged children. Most studies in this section used direct assessment of children's abilities through standardised tests.

4.2.1. Bornstein and Hahn (2007)

In a retrospective cohort study, Bornstein and Hahn (2007) assessed associations between sex, childcare type, outcome report source, and adaptive behaviour outcomes (including communication skills) in 29 four-year-old pre-school children in the United States who had been “entered into group care at a non-relative caregiver’s home in infancy”. All children were first-born in their family and term at birth. The authors drew on maternal and pre-school teacher reports while controlling for a wide range of factors related to family circumstances, child-care history, and child-care quality. Communication skills included receptive, expressive, and written communication. They found that child sex was significantly predictive ($p < 0.001$) of pre-school teacher-reported (but not mother-reported) communication outcomes for this group of children, with boys scoring lower than girls when controlling for family socio-economic status (SES) and cumulative hours of non-maternal care from 1 to 4 years. This effect was not observed in boys cared for by their parents at home or by a nanny in the child’s own home. The authors did not observe children in their childcare settings and thus were unable to determine “what features of other-home-group-care might affect boys adversely” (Bornstein and Hahn, 2007:33) but hypothesised that lack of individualised attention and competing demands placed on the caregiver as a result of less favourable ratios might affect boys’ development negatively.

4.2.2. Lim, Levickis and Eadie (2022)

Lim, Levickis and Eadie (2022) used data from the control arm of an intervention study to examine whether parent-reported hours of attendance at age 2 affected language outcomes at age 5 (measured by standardised assessment) for children experiencing adversity. Children participating in the study attended a range of Early Childhood Education and Care (ECEC) settings in Australia. The sample included 21 children who attended family childcare and whose parents completed home surveys at age 2 years, and a home language assessment at age 5. The authors found no evidence of a relationship ($p=0.28$) between hours spent in family day care and child language scores.

4.2.3. Clarke-Stewart (1986)

Clarke-Stewart (1986) conducted a cross-sectional study investigating children’s experiences in family day care in the USA and associated outcomes in a range of child development domains, including language outcomes (language comprehension, verbal fluency, knowledge of concepts). The sample included 20 children in family day care homes (as well as further children in other types of childcare), who were, on average, 32 months old. Families were predominantly white and of middle-class, professional status. Single parents, parents receiving welfare benefits, parents who did not speak English, and families living in dangerous areas were not eligible to take part in the study. Data on experiences in day care were collected through observation, while language outcomes were measured through standardised tests of language comprehension, verbal fluency, and knowledge of concepts. Clarke-Stewart reports data on these outcomes together with “memory span” in a single outcome domain entitled “cognitive ability”. However, as three out of the four outcome measures in this domain refer to language, it seems reasonable to include them here. The study found that children’s language outcomes were significantly better if their caregiver spoke to them frequently ($p < .05$), was responsive ($p < .01$), and read stories to them ($p < .001$). Helping ($p < .01$) or directing ($p < .05$) a child was associated with poorer language outcomes, as was more time spent playing alone with toys ($p < .05$). When children watched their peers, rather than joining in, language outcomes were also poorer, although this effect was significant only to a limited degree ($p < .1$). There were no significant associations between language outcomes and children’s verbal interactions with other children, social involvement with an individual child or the group, play with caregivers or other children, or the amount of time spent watching TV (among others). Caregiver characteristics, group composition, and physical environment also had no bearing on language outcomes.

4.2.4. Belsky, Lowe, Vandell, Burchinal, Clarke-Stewart, McCartney, and Tresch (2007)

Using the large, US-based NICHD dataset, Belsky et al. (2007) examined how childcare quality, quantity and type affect child functioning over time and how important childcare was, compared to parenting quality, in determining child outcomes. Starting in infancy, they assessed children's cognitive and social functioning 17 times (293 children with complete data over all time points), before school entry, in first through third grade, and in fifth and sixth grade, and took into account a wide range of family, classroom- and childcare-related factors. Researchers recorded whether the child was spending at least 10h/week in Childminding (other types of care were also recorded) at 17 time points throughout the child's first 54 months of life. The authors found that children who spent time in a childcare home at more time points had better vocabulary scores ($p < .05$) in Grade 3, as assessed by researchers through standardised tests, than children who spent time in childcare homes at fewer time points.

Summary of factors that affect children's language and communication outcomes:

Four studies investigated factors that affect language and communication outcomes in Childminding. Bornstein and Hahn (2007) found significant sex differences in communication skills, with boys scoring lower than girls. Lim, Levickis, and Eadie (2022) explored the impact of the frequency and duration of hours spent in Childminding on language outcomes in five-year-olds, observing no significant relationship. Clarke-Stewart (1986) found that frequent childminder communication had a positive effect on language skills, while solitary play and observing peers had a negative impact. Finally, Belsky et al. (2007) found children with more exposure to Childminding settings had better vocabulary scores in Grade 3 than children who spent less time in Childminding settings.

4.3. Which factors affect children's socio-emotional outcomes?

Predictors of socio-emotional outcomes are well-documented in the literature on Childminding: nine of the studies included in this review address the socio-emotional domain. The studies included in this section cover a wide range of socio-emotional outcomes, including play competence, interactions with strangers, relationships with the mother and the caregiver, adaptive functioning, and temperament, among others. Behavioural outcomes (such as internalising and externalising symptoms) are treated separately.

Socio-emotional outcomes are usually measured through interviews with informants who know the child well (parents or teachers, and in some cases self-reports by older children) and often use multiple informants. Direct observation in the childcare setting or in a laboratory setting is also used in some studies.

4.3.1. Bornstein and Hahn (2007)

Bornstein and Hahn (2007) found that boys who had attended home-based care during infancy scored significantly lower ($p < .01$) on social skills than girls in the same type of childcare, according to mothers' and pre-school teachers' assessment.

4.3.2. Howes and Stewart (1987)

Howes and Stewart (1987) conducted a cross-sectional observation-based study to determine how the number of childcare changes, age of entering childcare, and childcare quality impacted on young girls' and boys' play with adults, toys and peers. Participants were 55 toddlers (30 girls, age range 11-30 months), their mothers and 55 family day care providers (73 per cent licensed). The authors found that the age of entering childcare affected play with peers and adults differently, depending on the child's sex - for boys, a later start was beneficial, but this made no difference to girls. Frequent childcare changes also affected boys' play with objects and adults, but not girls' play.

Howes and Stewart (1987) found that all toddlers played more competently with toys if they had started childcare at a relatively later age (compared with their peers who had started younger) - this was the case even after toddlers' current age and the number of childcare changes had been taken into account. Boys' play with peers and adults also benefitted from a later start, but this was not important for girls. The authors also found that more childcare changes had a negative effect on all toddlers' competence in peer play (with current age and age at childcare entry taken into account). Again, boys' play with objects and adults also suffered if childcare changed frequently, but girls were not so affected.

In addition, Howes and Stewart (1987) found that the quality of care made a significant difference for toddlers' play with objects and adults, regardless of child sex. Girls also played more competently with peers if the quality of care was high. This relationship persisted when family characteristics were taken into account.

4.3.3. Clarke-Stewart (1986)

Clarke-Stewart (1986) measured a wide range of socio-emotional outcomes in children who attended home-based childcare. Children's behaviour was observed in a laboratory setting and in the child's home. Measures were constructed post-hoc based on the observed behaviour. Socio-emotional measures included how close the child stayed to their mother in the lab ("proximity to mother"), how positive, reciprocal, cooperative and empathic the child's interactions with their mother were in the lab ("social reciprocity with mother"), how well the child could take another person's perspective, the child's knowledge of emotional words and situations, and about gender appropriate behaviour ("social knowledge"), how the child interacted with an unfamiliar researcher ("sociability with adult stranger"), positive interaction with an unfamiliar peer in the lab ("sociability with an unfamiliar peer"), negative interactions with an unfamiliar peer ("negative behaviour to the peer"), and the child's behaviour at dinner time ("social competence at home").

"Social knowledge" was higher for children whose caregivers made more verbal demands ($p < .05$), but lower for children who interacted more with infants ($p < .05$) and who received more help from their caregivers ($p < .01$). Children who scored highly on social knowledge were less likely to behave aggressively towards another child ($p < .05$). "Sociability to a stranger in the lab" was associated with a well-structured childcare home, fewer adult decorations, and (surprisingly) more dangers in the childcare home. Greater "caregiver informativeness" was also associated with increased sociability to a stranger in the lab, but more verbal demands from the caregiver and more time spent alone in a room at the childcare home were associated with reduced sociability in the lab. All associations with sociability in the lab were of limited statistical significance ($p < .10$). "Sociability to a stranger in the home" was positively associated with the number of social ($p < .01$), verbal ($p < .01$) and physical ($p < .05$) interactions between caregiver and child in the childcare home and the amount of control the caregiver exercised over the child ($p < .05$). The number of caregiver-group social interactions ($p < .01$), the amount of help received from another child ($p < .05$), the level of caregiver informativeness ($p < .10$), the amount of time spent watching peers ($p < .05$) or playing alone ($p < .10$), the number of aggressive

interactions with other children ($p < .05$) and the amount of time spent in group lessons ($p < .01$) were significantly associated with lower sociability to a stranger in the home.

Finally, “proximity to mother” was reduced when the daycare group consisted mainly of younger children (as opposed to a mixed group or a group composed mainly of older children) ($p < .10$), when the caregiver was more informative ($p < .001$), and when the caregiver exercised more control over the child ($p < .05$). Children scored higher on “proximity to mother” when caregivers issued more verbal demands ($p < .05$), when children spent more time interacting with an infant ($p < .01$), and when children spent more time playing alone with an object ($p < .10$) or engaging in group play ($p < .10$).

4.3.4. Sluiter, Fekkes and Fukkink (2023)

In a Dutch study, Sluiter, Fekkes and Fukkink (2023) used observations, as well as parent and caregiver interviews, to explore associations between the caregiver-child relationship and social-emotional functioning (self-regulation, compliance, adaptive functioning, autonomy, affect, social communication, and interactions with people) in centre-based and home-based care. Participating children (50 per cent girls) were, on average, 2.5 years old, and most had at least one parent born in the Netherlands (91 per cent), lived with both parents (92 per cent) and came from middle-high income homes (90.8 per cent) with university-educated parents (73 per cent). 74 children attended home-based childcare with 33 home-based care providers. Regardless of setting type, a close caregiver-child relationship was predictive of better caregiver ($p < .001$) (but not parent-) reported social-emotional development. Lower levels of caregiver-child conflict were significantly associated with higher socio-emotional development, regardless of setting type.

4.3.5. Yamauchi and Leigh (2011)

Yamauchi and Leigh (2011) used data from an Australian cohort study to examine the relationship between quality indicators (carer/child ratio, share of qualified staff, and expert ratings) and toddlers’ behavioural outcomes (as reported by their parents) in a range of childcare settings. 3,104 children aged 0-1 and 2-3 years in 2006 were included in their analysis. For children in home-based childcare, the study found that children were significantly ($p < .05$) more open to strangers and unfamiliar places if they experienced a lower carer-child ratio in their childcare setting. The researchers also tested whether carer-child ratios might affect the child’s ability to persist with an activity or return to it after an interruption or be associated with children’s response to frustration and behaviour when upset – but they found no such association. Outcomes related to the proportion of qualified staff and expert quality ratings were not reported separately by childcare type.

4.3.6. Belsky et al. (2007)

Belsky et al. (2007), discussed above, found that time spent in childcare homes was not significantly correlated with teacher-assessed social skills or socio-emotional development in Grade 1, 3, 5 or 6. However, in an earlier study (NICHD, 2005) based on the same dataset, the research team found that children who were attending a childcare home at least one third of the assessment points between 54 months and Grade 3 started off with lower teacher-assessed socio-emotional skills but showed significantly greater increases in teacher-rated socio-emotional skills over this timespan than children who had spent less time in childcare homes, eventually overtaking their peers in Grade 3. In an earlier study based on the same dataset (NICHD, 2004), the research team also found no significant impact of time spent in childcare homes on mother- or caregiver-reported social skills at 54 months of age.

4.3.7. Bornstein, Putnick and Suwalsky (2016)

Bornstein, Putnick and Suwalsky (2016) conducted a case-control study to determine whether hours in childcare affected infants' relationships with their mothers and their caregivers (including in-home caregivers, such as nannies, and external family childcare). 92 infants and 153 mothers and caregivers took part in the study. Of these, 29 were family childcare providers. All mothers were European American, married, and living with their husbands, on average highly educated and of middle- to high socioeconomic status. In measuring relationships, the researchers assessed how sensitive, structuring, responsive, and involved mothers and carers were in their interactions with the infant. When analysing the data, the researchers took into account the infant's sex, birth order, birth weight and age (in days), the mother's and caregiver's age and level of education, and the family's economic situation. The study found that the number of weekly hours in childcare had no impact on the emotional relationship between the infant and their mother or caregiver. The number of other infants in the family childcare setting was also unrelated to infants' relationships with their mothers or carers. Infants' relationships with their mother and their caregiver did not affect each other.

4.3.8. Schaack, Le and Setodji (2017)

Schaack, Le and Setodji (2017) (discussed above) found that higher provider qualifications (an Associate's Degree, a Bachelor's Degree, or a Higher Education Degree in ECE or an ECE-related field, compared to no degree) did not significantly change toddlers' socio-emotional outcomes, with one exception: children whose carer had an Associate's Degree were significantly ($p < .01$) less likely to have a negative disposition than children whose carer did not have any higher education degree – but this was not the case for the other types of degree. For children whose carer did not have a higher education degree, it made no difference to their socio-emotional outcomes whether the carer had taken ECE-related courses or not.

Summary of factors that affect children's socio-emotional outcomes:

Factors influencing children's socio-emotional outcomes in Childminding settings are widely studied, with nine studies covering addressing this domain. Bornstein and Hahn (2007) found boys in Childminding scored lower on social skills than girls, while Howes and Stewart (1987) noted later entry into childcare benefited boys' play with peers and adults. Clarke-Stewart (1986) linked caregiver behaviour to children's social knowledge and sociability with strangers. Sluiter, Fekkes, and Fekkink (2023) found a close childminder-child relationship predicted better social-emotional development. Yamauchi and Leigh (2011) associated a better childminder-child ratio in Childminding settings with children being more open to strangers. Conversely, Belsky et al. (2007) found no significant relationship between time spent in Childminding settings and socio-emotional development. Likewise, Bornstein, Putnick, and Suwalsky (2016) found hours in Childminding did not impact infants' relationships with their mothers or caregivers. Schaack, Le, and Setodji (2017) noted higher childminder qualifications did not significantly alter toddlers' socio-emotional outcomes. These studies highlight the complexity of socio-emotional development in Childminding settings and indicate the caregiver-child relationship and child-adult ratios may be contributing factors.

4.4. Which factors affect children's positive and challenging behaviours?

Studies on determinants of child behaviours included in this review covered a range of behaviours. Challenging behaviours included internalising and externalising behaviours, delinquency and substance use, negative emotional outbursts, conflict with teachers, vigilant, angry, disruptive or aggressive behaviour. Positive behaviours included pro-social, compliant and expressive behaviour, as well as positive learning behaviours. Studies on child behaviour outcomes drew on parent and teacher reports (5) and direct observation of child behaviour (4).

4.4.1. Averdijk, Ribeaud, and Eisner (2022)

In a cohort study of first-graders in a large Swiss city, Averdijk et al. (2022) studied relationships between the amount and type of early external childcare and multi-informant-reported externalising behaviour, internalising problems, prosocial behaviour, delinquency, and substance use from age seven to 20 years. One thousand two hundred and twenty five (52 per cent male) children took part in the study. The study found that more time spent in a Childminding setting before kindergarten was associated with worse behavioural outcomes and identified a cut-off point of two to three days a week: teacher-reported externalising behaviour (including aggression, nonaggressive externalising, and ADHD symptoms) increased between ages 9 and 13 when children had spent more than two to three days per week at a family daycare mother before kindergarten, although the number of children who spent more than two days a week with a daycare mother was small (38.3 per cent). Furthermore, self-reported aggression at ages 15 and 17 also increased when children spent more than about three days per week at a daycare mother, although the authors caution that this finding was weak and unstable. There was some isolated evidence that more care by daycare mothers was associated with more externalising and less pro-social behaviour for children from high-risk backgrounds, and with less externalising and more pro-social behaviour for children from low-risk backgrounds, up to adolescence. There was no consistent evidence for a relation between time spent at a daycare mother and delinquency or substance use.

4.4.2. Sluiter, Fekkes and Fukkink's (2023)

Sluiter, Fekkes and Fukkink's (2023) study, reported above, also investigated associations between the caregiver-child relationship and challenging behaviour (internalising and externalising behaviour) in toddlers from upper-middle-class homes (mean age 2.5 years). They found that in both setting types (centre- and home-based), a close caregiver-child relationship significantly protected children from parent- ($p < .001$) and teacher-reported ($p < .001$) internalising behaviour. There was no relationship with parent- or teacher-reported externalising behaviour. Furthermore, greater dependency in the child-caregiver relationship was associated with significantly higher caregiver-reported internalising ($p < .001$) but lower externalising behaviour ($p < .05$) in both setting types. Dependency was not significantly associated with parent-reported internalising or externalising behaviour. High levels of carer-child conflict were related to increased caregiver-reported internalising and externalising behaviour in both setting types (both $p < .001$). This relationship was significantly ($p < .001$ parent-reported, $p < .002$ caregiver-reported) stronger in home-based than centre-based care, underlining the importance of the dyadic caregiver-child relationship in this type of setting.

4.4.3. Rusby et al. (2013)

Rusby et al. (2013), discussed above, investigated whether caregiver stress was associated with the frequency of child behaviour challenges. The study found that greater caregiver stress was significantly associated with more caregiver-reported child challenging behaviours ($p = .001$). However, when the researchers observed interactions between caregivers and children in their care, they did not find any association between reported caregiver stress levels

and children's negative behaviour or negative emotional outbursts. The authors also tested an intervention designed to improve caregivers' effective management of challenging behaviour and found that more effective behaviour management was associated with a statistically significant ($p < .05$) reduction in children's challenging behaviour.

4.4.4. Lemay and Bigras (2015)

Using data from a longitudinal study, Lemay and Bigras (2015) examined how quantity, type and quality of care interact in predicting externalising and internalising behaviours among 36-month-old children attending educational childcare in Quebec (Canada) from their first years of life. The sample included 25 children who attended home-based childcare services for more than 15 months a week from their first to third year of life (as well as further children in centre-based childcare). The authors found that quality of home-based childcare affected children's challenging behaviours differently, depending on the amount of time they spent in home-based childcare: for children who spent less than 35 hours per week in a childcare home, a high-quality schedule was beneficial; these children showed fewer externalising and internalising behaviours. Children in this group also showed less externalising behaviour if they had access to high-quality activities and an educator who supported communication. However, a different picture emerged for children who spent more than 45 hours/week in a childcare home: for these children, a high-quality schedule was associated with increased externalising behaviours, and an educator's democratic intervention style was associated with more internalising behaviours. All of these associations were statistically significant.

4.4.5. Belsky et al. (2007)

Belsky et al. (2007) (discussed above) found that children who spent time in a childcare home at more time points had more (teacher-reported) conflict with teachers ($p < .001$) and showed more externalising behaviour ($p < .05$) in first grade than children who spent time in childcare homes at fewer time points, but these challenging behaviours did not persist beyond first grade.

4.4.6. Coley, Votruba-Drzal, Miller, and Koury (2013)

Coley et al. (2013) explored links between the extent, type and timing of EEC experienced from infancy through pre-school with children's behavioural functioning in kindergarten, using data from a large nationally representative US-based cohort study. The findings reported in this study are based on a sub-set of 6,000 children (parent reports) and 4,500 children (teacher reports), but it is unclear how many of these attended home-based childcare. The authors took into account a wide range of factors relating to child, parent and household characteristics, as well as behaviour reports from parents and teachers. The authors found that EEC extent, type and developmental timing interact to predict children's later functioning. In particular, children who attended full-time home-based care aged two had improved teacher-reported learning behaviours and fewer teacher-reported externalising behaviours in kindergarten, while children who were in full-time home-based care at age four had more teacher-reported externalising behaviours compared to those who attended part-time at the same ages. However, the effect of early childhood education and care type and extent on children's challenging behaviour and learning behaviours was small overall, suggesting that these are not very important factors in relation to children's behaviour. Due to the way the authors analysed the data, it is not possible to determine whether these differences were statistically significant.

4.4.7. Rusby, Smolkowski, Marquez, and Taylor (2008)

Rusby et al. (2008) conducted a randomised controlled trial to assess a video-based training programme aimed at promoting positive social development in young children attending family

childcare. At baseline (before the intervention started), the authors also assessed whether children's challenging behaviours and positive behaviours were affected by the childcare environment (enriched and organised environment), the caregiver's planfulness, or the way the caregiver interacted with children (monitoring, approval: criticism ratio, and effective behaviour management). They took into account the caregiver's age, education and years of experience; the number of adults providing care, and the number of children present. Participants were certified and registered home-based childcare providers in Oregon, USA (baseline: 63 (33 intervention, 30 control)). Child participants were aged between 2.5 and 6 years. At baseline, an enriched and organised environment, greater planfulness, monitoring children's activities, more approving than critical interactions, and effective behaviour management all predicted significantly more positive behaviour, while the approval: criticism ratio and effective behaviour management also predicted significantly reduced challenging behaviour (but enriched environment, organised environment, planfulness, monitoring or the number of children present had no effect on challenging behaviour).

Greater experience providing family childcare was associated with more effective behaviour management practices.

4.4.8. Gunnar et al. (2010)

Gunnar et al. (2010) observed home-based childcare providers and measured children's cortisol levels (an indicator of stress) at home and at childcare to determine whether cortisol increases over the day in family day-care settings; whether and how structural and process quality affect this rise; whether children's anxious, vigilant, or angry, aggressive behaviour is related to cortisol in childcare; whether child sex affects how behaviour responds to cortisol changes; and how child behaviour affects any links between process quality and cortisol stress response. One hundred and fifty one children aged 3 to 4.5 years, who were availing of full-time care (< 20h/week) at one of 120 family-based day-care settings in a major metropolitan area in the USA and had been attending for at least two months, took part in the study (the care providers' own children were excluded). The authors found that girls became more anxious and vigilant as their cortisol levels rose, while boys tended to respond with more angry, aggressive behaviour.

In a follow-up study (Gunnar et al. 2011), the authors explored whether the cortisol rise in childcare observed at the time of the original study (T1) affected how anxious, vigilant behaviour changed over the following six months (T2) and whether cortisol rise at T1 was related to higher internalising symptoms at T2. They also explored whether child temperament predicted how much cortisol affected behaviour. The authors also took into account children's home environment and childcare quality at T1, as well as for cortisol activity at T2. 107 children (62 girls) took part in this follow-up study. The study found that cortisol rise at T1 was associated with behaviour at T2, but that the extent of this association depended on child temperament: cortisol rise at T1 was more predictive of anxious, vigilant behaviour and internalising symptoms for children with higher levels of behavioural inhibition (shyness), as observed in the lab and reported by parents and caregivers. Shy children who had large cortisol rises at T1 showed more internalising symptoms at T2 than more outgoing children who had experienced similar cortisol activity at T1. In contrast, shy children with low cortisol activity at T1 showed fewer internalising symptoms and reduced anxious, vigilant behaviour over time than more outgoing children who also had low cortisol activity at T1. For more outgoing children, cortisol rise at T1 was not significantly related to changes in anxious, vigilant behaviour over time.

4.4.9. Barnes, Leach, Malmberg, Stein, and Sylva (2010)

Barnes et al. (2010) used data from a large, UK-based cohort study of children born in London and Oxford between 1998 and 2001 to examine the relationship between amount (average hours per week) of home-and centre-based childcare attendance for children (as well as other

childcare-related factors) at 3, 10, 18, and 36 months of age and mother-reported challenging behaviour and social competence at 36 months. The study also took into account a range of child- and family-related factors. The sample included 78 children attending a Childminding setting at 36 months. The study found that average hours spent with a childminder from 0 to 18 months and from 19 to 36 months were unrelated to mother-rated disruptive, expressive, or compliant behaviour at 36 months.

Summary of factors that affect children's positive and challenging behaviours:

Studies on determinants of positive and challenging behaviours in Childminding settings encompassed various behaviours, including internalising and externalising behaviours, delinquency, substance use, and emotional outbursts. Averdijk et al. (2022) found that increased time in Childminding before kindergarten was linked to worse behavioural outcomes. Sluiter, Fekkes, and Fukkink (2023) highlighted the protective role of a close childminder-child relationship in reducing internalising behaviour in toddlers. Rusby et al. (2013) identified a link between childminder stress and child behaviours, noting that effective behaviour management mitigated these issues. Lemay and Bigras (2015) found higher quality was linked to a reduction in challenging behaviours for children with fewer hours of care. Gunnar et al. (2010) noted sex differences and the influence of child temperament on stress response and subsequent behaviour. Overall, these studies underscore the complex interplay between Childminding quality, childminder-child relationships, and children's behavioural outcomes.

4.5. Which factors affect children's health and wellbeing?

Determinants of children's health and wellbeing are explored in a smaller number of studies. Among these, several studies measured changes in children's cortisol levels as an indicator of stress, while others also took into account observed and reported wellbeing. Studies on determinants of health outcomes explored factors affecting reported ADHD symptoms and directly measured Body Mass Index and physical activity levels.

4.5.1. Health

4.5.1.1 Averdijk et al. (2022)

Averdijk et al. (2022), discussed above, found a significant relationship between number of days per week spent in a Childminding setting before kindergarten and the probability of displaying (teacher-reported) ADHD symptoms at age 11, 12, and 13. They identified a cut-off point of two to three days a week, beyond which these symptoms became more likely. However, the number of children who spent more than two days a week with a "daycare mother" was small (38, 3 per cent).

4.5.1.2. Jiang, Risica, Tovar, Cooksey Stowers, Schwartz, Lombardi, and Gans (2023)

In a US-based cross-sectional study, Jiang et al. (2023) explored whether the relationship between (amount, type and quality of) foods and beverages served in family child-care homes and preschool-aged children's weight status (body mass index) was affected by the amount of food and beverages consumed by children in these settings (diet quality). The sample included 370 children (51 per cent girls, 58 per cent Latinx) cared for by 120 family childcare providers (67 per cent Latinx). Participating children were on average 3.5 years old. About 35 per cent of children were classed as overweight or obese. The study found that the quality of food offered

was significantly ($p < .01$) and positively associated with children's diet quality. However, food offered did not directly predict children's BMI. Instead, food served indirectly affected child weight through child diet quality ($p < .05$). Beverages served were not associated with children's diet quality, possibly because most providers served healthy beverages.

4.5.1.3. Vanderloo, Tucker, Johnson, Burke, and Irwin (2015)

In a Canadian study, Vanderloo et al. (2015) used accelerometers attached to children's waist to compare physical activity levels in three early learning environments (centre-based and home-based childcare, and full-day kindergarten) and assess whether the number of active and sedentary opportunities, the sedentary, fixed, or portable play environment, and staff behaviour, training and education influenced preschoolers' physical activity. Participants were pre-school children aged 2.5-5 years (mean age 4.18 years, 53.2 per cent female). Thirty-one children attended one of 11 childcare homes. The study found overall low levels of moderate to vigorous physical activity in childcare homes. None of the factors tested were significantly associated with moderate-vigorous physical activity or total physical activity in childcare homes.

4.5.2. Wellbeing

4.5.2.1 Sluiter, Fekkes, and Fekkink (2023)

Sluiter et al. (2023), discussed above, found that a close carer-child relationship predicted higher levels of parent- ($p < .01$) and carer ($p < .001$) reported child wellbeing, while frequent carer-child conflicts were associated with increased parent- and caregiver-reported internalising behaviour.

Children who displayed a "developmentally inappropriate degree of overreliance and possessiveness" (dependency) in their relationship with their caregiver (Sluiter, Fekkes and Fekkink, 2023: 105) scored significantly lower on observed, parent- and caregiver-reported wellbeing (all $p < .001$). Lower levels of conflict were also significantly associated with higher socio-emotional development and greater observed wellbeing, regardless of setting type.

4.5.2.2 Gunnar et al. (2010)

Gunnar et al. (2010) (discussed above) found that for most children (63 per cent) taking part in the study, cortisol levels increased at the daycare home (compared to the child's own home), with 40 per cent classified as a stress response. Observations showed that intrusive, overcontrolling care was associated with the cortisol rise (but warm, supportive care had no impact on cortisol levels). This association or its strength did not depend on child behaviour, except in one case: boys scoring low on angry, aggressive behaviour were more sensitive to variations in warm, supportive care than boys scoring high on this behaviour. Child age or sex or family background were not significantly associated with the cortisol rise, nor were the number of months spent at the daycare home, hours per day, group size, number of care providers, adult-child ratio, or whether a sibling was at that daycare home. Providers' years of experience, highest level of education, formal training in child development or early childhood education, and whether the provider had their own child under age five in the day care also had no effect on children's cortisol rise.

4.5.2.3 Dettling et al. (2000)

Dettling et al. (2000) conducted a cross-sectional study of pre-school children (21 children (13 girls) aged three through five years) attending licensed home-based childcare in the Greater Minneapolis area. The study investigated whether age range of children in the group, adult-child ratio/group size, separation from family/parents and the quality of attention and stimulation

received at childcare affected children's patterns of cortisol production in home-based group care. The study also explored whether child temperament had an impact on patterns of cortisol production. The authors reported that the amount of attention and stimulation provided significantly predicted children's cortisol patterns over the day ($p < .01$): "Children receiving higher quality of focused attention/stimulation were less likely to show an increasing pattern of the cortisol over the childcare day." Carer- and parent-reported child temperament was also a significant factor explaining cortisol changes over the course of the day, with more emotionally negative children ($p < .01$) and those with less self-control ($p < .1$) experiencing larger increases in cortisol levels from morning to afternoon. Surgency⁷ or teacher-rated aggression were unrelated to children's cortisol level, as were the age range of children in the group and the adult-child ratio/group size.

4.5.2.4 Groeneveld et al. (2010a, 2010b, 2016)

Groeneveld et al. (2010a, 2010b), discussed above, found that greater caregiver sensitivity was significantly ($p < .05$) related to children's improved reported wellbeing. Furthermore, after taking into account age, sex, and global quality, greater caregiver sensitivity was significantly associated with lower total cortisol levels throughout the day and approaching a significant relationship with wellbeing ($p < .06$). The authors furthermore found that children in childcare homes that scored high on caregiver sensitivity had significantly ($p < .05$) lower total levels of cortisol than children in childcare homes with low sensitivity ratings. Lower cortisol levels at 11am were significantly ($p < .05$) related to higher caregiver sensitivity, but not at 3pm. Observed wellbeing was unrelated to cortisol change or total levels of cortisol throughout the day. Noise was not related to wellbeing or cortisol.

After controlling for children's age, sex, and fearfulness, the authors (Groeneveld et al. 2010a) found that caregiver cortisol change throughout the day, caregiver workload, and caregiver perceived stress were not significantly related to children's cortisol levels or reported wellbeing. Only caregiver perceived stress continued to be significantly related to children's observed wellbeing ($p < .05$). Child temperament was an important factor, in that more fearful children had significantly ($p < .05$) lower observed wellbeing than less fearful children, and their reported wellbeing was significantly ($p < .05$) more susceptible to caregiver cortisol levels than that of less fearful children.

In a later study, Groeneveld et al. (2016), discussed above, found that a video-feedback intervention aimed at improving sensitivity among home-based childcare providers had no overall significant effect on observed child wellbeing. Furthermore, prior to the intervention, observed child wellbeing was also unrelated to the number of months a child had spent with their trusted caregiver (controlled for age). However, the authors found that the number of months children had spent with their trusted caregiver affected how well the intervention worked: for children who were unfamiliar with their caregiver, observed wellbeing increased over time regardless of the intervention (control and intervention group), while for children who knew their caregiver well, only those in the intervention group experienced further improvements in their observed wellbeing. The study also found that, after the intervention, greater caregiver sensitivity in the intervention group was significantly ($p < .05$) associated with higher observed wellbeing scores.

4.5.2.5 Linting, Groeneveld, Vermeer, and van IJzendoorn (2013)

Drawing on data from the studies reported by Groeneveld et al. (2010a, 2010b, 2016), Linting et al. (2013) explored associations of noise level and noise variability with children's observed wellbeing in home-based childcare. The findings are based on data from a sample of 103

⁷A measure of temperament based on "scales assessing high intensity pleasure or sensation seeking, activity level, impulsivity, shyness (reverse score), and approach or interest in new things".

children (50 per cent girls) and their caregivers (103). Eighty percent of the children were between 12 and 36 months old (range = 7–43 months, $M = 28.21$). The authors found that both average noise level ($p < .03$) and noise variability ($p < .01$) were significantly related to observed child wellbeing, with higher noise levels and greater noise variability being associated with lower observed child wellbeing. The authors also found that both factors only became significant once they reached a critical threshold: if the average noise level rose above 59 dB, observed child wellbeing deteriorated steeply. Likewise, if the standard deviation (a measure of variability) of noise levels across observation periods exceeded 8.3, observed child wellbeing suffered. Child sex, age, or temperament did not affect the relationship between noise levels or variability and observed wellbeing.

Summary of factors that affect children's health and wellbeing:

Studies on determinants of children's health and wellbeing in Childminding settings included a range of outcome measures including cortisol levels as stress indicators, ADHD symptoms, Body Mass Index (BMI), and physical activity. Averdijk et al. (2022) found an association between more than two to three days per week in Childminding settings before kindergarten and ADHD symptoms at ages 11–13. Jiang et al. (2023) found that food quality in Childminding settings positively influenced children's diet quality but not BMI. Vanderloo et al. (2015) reported low physical activity levels in childcare homes, unaffected by various tested factors. For wellbeing, Sluiter et al. (2023) noted that close childminder-child relationships improved reported wellbeing, while conflicts increased internalising behaviour. Gunnar et al. (2010) identified a rise in cortisol linked to intrusive care, with boys being more sensitive to supportive care. Dettling et al. (2000) found higher quality attention in Childminding predicted lower cortisol levels. Likewise, Groeneveld et al. (2010a, 2010b, 2016) associated childminder sensitivity with lower cortisol and improved wellbeing. Linting et al. (2013) reported that higher noise levels and variability in Childminding settings negatively impacted observed child wellbeing. Overall, these studies underscore the importance of quality care and supportive environments in promoting children's health and wellbeing in Childminding settings.

4.6. Which factors affect children's cognitive outcomes?

A small number of studies addressed determinants of cognitive outcomes in Childminding, with a particular focus on literacy and numeracy outcomes. These studies used standardised assessment tools to measure children's skills.

4.6.1. Iruka and Forry's (2018)

Iruka and Forry's (2018) study, discussed above, found that childcare quality in home-based childcare at 36 months was predictive of children's preschool and kindergarten reading and math outcomes when controlling for child age, sex, race, poverty status, and learning stimulation in the home: children attending a setting that offered good process quality with weekly academic activities achieved, on average, higher pre-school reading and maths scores than children attending home-based childcare of lower quality and with fewer academic activities.

4.6.2. Belsky et al. (2007)

Belsky et al. (2007), discussed above, found that the number of months children spent in a childcare home throughout the first 54 months of their lives had no relationship with their reading or maths skills or work habits at any point (outcomes were measured up to grade

5). In an earlier study (NICHD 2004) based on the same dataset, the research team found no relationship between time spent in Childminding and children's cognitive outcomes (as measured by a researcher through standardised tests) at 54 months of age.

4.6.3. Schaack et al. (2017)

Schaack et al. (2017), discussed above, found no relationship between regulated or unregulated paid family childcare provider's qualifications (field of degree and higher education degree) and toddlers' cognitive outcomes, including early communication, early problem solving, expressive language, receptive language, listening and comprehension, matching and discrimination, and early counting or quantitative skills.

4.6.4. NICHD (2004)

The NICHD (2004) study, discussed above, found that the overall number of hours of care received in childcare homes before 54 months of age was not significantly associated with cognitive outcomes at 54 months of age. A follow-up study (NICHD 2005) found that children who had spent more hours in childcare homes throughout the first 54 months of life performed worse in tests assessing letter-word identification (a measure of pre-reading skills in terms of identifying isolated letters and words) in Grade 1 (six - seven years old) than children who had spent fewer hours in childcare homes. However, the opposite was true for children's scores in tests assessing practical mathematical problem-solving skills ("Applied Problems"), ability to name objects in pictures ("Picture Vocabulary"), and short-term memory ("Memory for Sentences"), where children did better if they had spent more hours in childcare homes (all significant at $p < .05$).

Summary of factors that affect children's cognitive outcomes:

The small number of studies that explored determinants of cognitive outcomes in Childminding, tended to focus on literacy and numeracy using standardised assessments. Iruka and Forry (2018) found that high-quality Childminding with weekly educational activities predicted better preschool and kindergarten reading and maths outcomes. Belsky et al. (2007) and NICHD (2004) found no relationship between time spent in Childminding and cognitive outcomes up to grade 5. Schaack et al. (2017) reported no link between caregivers' qualifications and toddlers' cognitive outcomes. However, a follow-up NICHD (2005) study noted that children who spent more time in Childminding had better scores in practical problem-solving, vocabulary, and memory tests, but worse pre-reading skills in Grade 1.

5. Discussion

This extensive and thorough literature review has uncovered a range of empirical findings that shed light on previously underexplored issues within the realm of Childminding practices, thereby contributing to a comprehensive exploration of the factors that affect children's experiences and outcomes within these settings. Unlike other forms of Early Years and School Age Care provision, Childminding stands out due to its multifaceted nature, encompassing diverse settings, personalised and often enduring caregiver-child relationships, and the potential for varied outcomes. The results gleaned from this comprehensive rapid review reveal a complex range of factors that may shape the experiences and outcomes of infants, toddlers, children, and young people in Childminding services. Through this synthesis of existing research, a nuanced and intricate picture emerges, illustrating the interplay of numerous factors that may contribute, in varying degrees, to the overall Childminding landscape and highlight the complexity inherent in Childminding environments. The dominant trends from the research findings will now be further explored under four themes of child determinants, caregiver determinants, structural determinants, and pedagogical determinants, as displayed in figure 2.

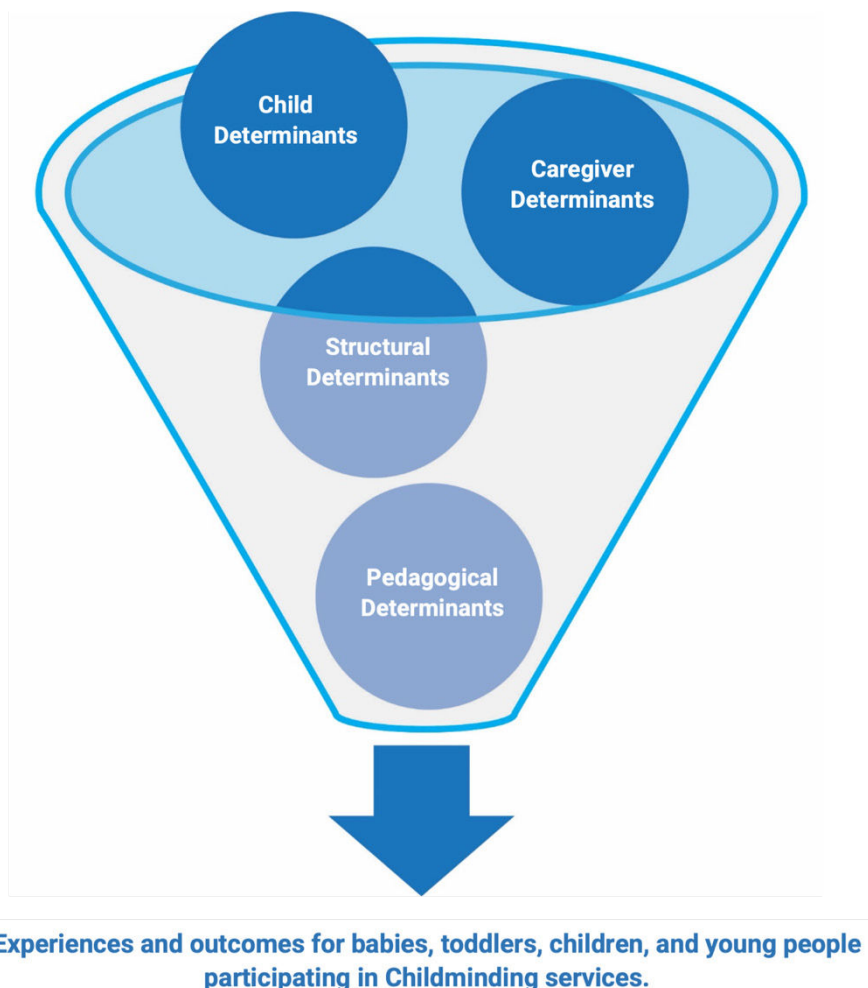


Figure 2 - Summary of factors that determine outcomes and experiences for children participating in Childminding services

5.1. Child determinants

The research findings on child factors that may determine experiences and outcomes for infants, toddlers, children and young people in Childminding services present a nuanced and complex picture, with multiple factors having been identified, some of which were found to have an influencing effect on each other. As seen in figure 3, four factors relating directly to the child were identified from the findings of this rapid review, namely child sex, child temperament, child

age and family economic status. Figure 3 summarises these findings, in order of the number of relevant included studies (n=6).

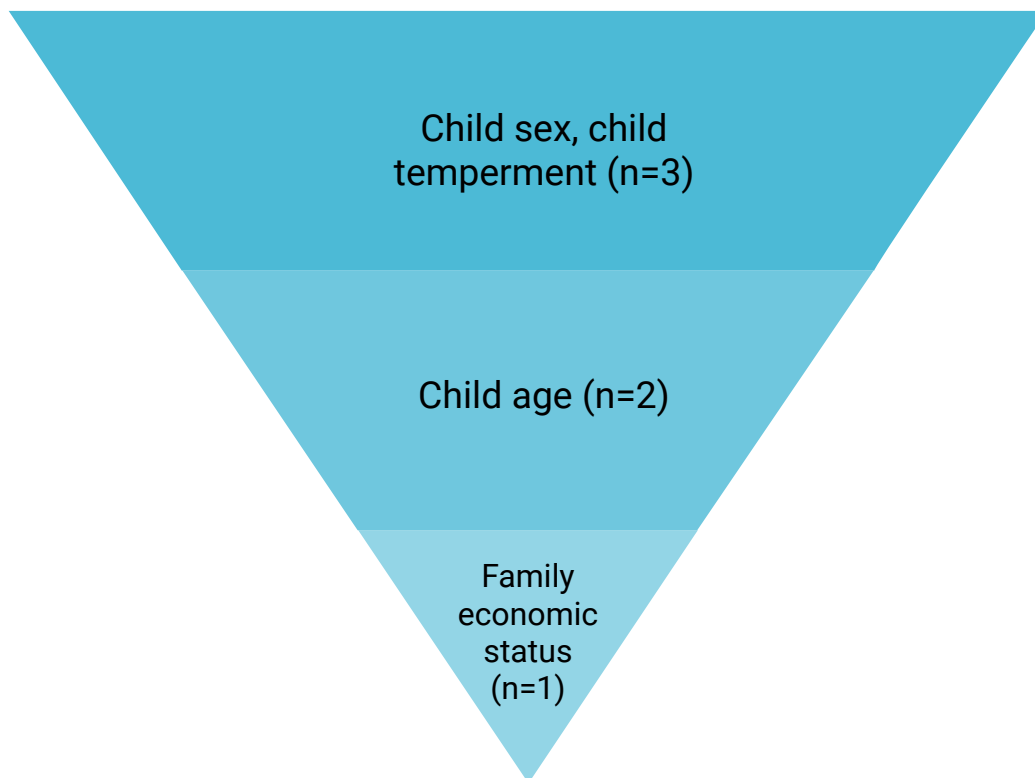


Figure 3 - Child related determining factors

Child sex and temperament were associated with outcomes and experiences in Childminding services in three of the 50 included studies.

With regards to relationships between child's sex and their experiences and outcomes in Childminding, overall, boys were found to be more sensitive to frequent childcare changes and the age of entering home-based childcare and to have poorer communication and social outcomes than girls. For example, Bornstein and Hahn (2007) found that child sex was significantly predictive of pre-school teacher-reported (but not mother-reported) communication outcomes in children who had attended "other-home-group-care" (i.e. a Childminding setting) in infancy, with boys scoring lower than girls. This effect was not observed in boys cared for by their parents at home or by a nanny in the child's own home. Bornstein and Hahn (2007) also found that boys who had attended home-based care during infancy scored significantly lower on social skills than girls in the same type of childcare.

Howes and Stewart (1987) reported on the impact of the child's sex on other determining factors. They found the age of entering home-based childcare affected play with peers and adults differently, depending on the child's sex, as for boys, a later start was beneficial, but this made no difference to girls. Frequent childcare changes also affected boys' play with objects and adults, but not girls' play. In relation to experiences with the caregiver, Gunnar et al. (2010) observed that girls received more warm, supportive care than boys, but there were no significant child sex differences in negative, intrusive care, as measured by the Observational Rating Scales of Caregiving Environment. Gunnar et al. (2010) also found that girls and boys responded differently to changes in cortisol levels, with girls becoming more anxious and vigilant as their cortisol levels rose and boys tending to respond with more angry, aggressive behaviour.

These findings emphasise the importance of considering sex-specific dynamics in Childminding settings and tailoring support strategies accordingly. Addressing the unique needs and sensitivities of boys and girls can contribute to developmental outcomes and foster a nurturing environment that is conducive to positive experiences in Childminding.

Regarding child temperament, Gunnar et al. (2011) found that cortisol rises were associated with child behaviour, but that the extent of this association depended on child temperament: with the cortisol rise being more predictive of anxious, vigilant behaviour and internalising symptoms for children with higher levels of behavioural inhibition (shyness). Shy children who had large cortisol rises showed more internalising symptoms than more outgoing children who had experienced similar cortisol activity. In contrast, shy children with low cortisol activity showed fewer internalising symptoms and reduced anxious, vigilant behaviour over time than more outgoing children who also had low cortisol activity. For more outgoing children, cortisol rise was not significantly related to changes in anxious, vigilant behaviour over time.

Also relating to cortisol levels, Dettling et al. (2000) found childminder- and parent-reported child temperament was a significant factor in explaining cortisol changes over the course of the day, with more emotionally negative children and those with less self-control experiencing larger increases in cortisol levels from morning to afternoon. Considering the impact of caregiver cortisol levels, Groeneveld et al. (2010a, 2010b) found more fearful children had significantly lower observed wellbeing than less fearful children, and their reported wellbeing was significantly more susceptible to caregiver cortisol levels than that of less fearful children. These findings underscore the importance of considering individual differences in child temperament when assessing behaviour and emotional regulation in Childminding settings. Understanding how individual children's temperament interacts with experiences in a Childminding setting can enable childminders to provide targeted support strategies that promote positive experiences and enhance child wellbeing.

Relationships between a child's age and their outcomes and experiences in Childminding settings was not extensively addressed across the reviewed studies, with only two of the 50 studies included in this review identifying it as a factor associated with outcomes and experiences. Maher, Frestedt and Grace (2008) found children's age was significantly associated with ratios, with younger infants being significantly more likely to experience a lower adult-child ratio than older children. Vandenbroeck, Slot and Hulpia (2021) found that the quality of emotional support was overall higher than the quality of educational support, especially for toddlers. This suggests a prioritisation of nurturing care and supportive interactions for this age group. While these findings offer limited insights into the broader impact of age in Childminding settings, they underscore the importance of considering age-specific needs and developmental stages when designing Childminding environments.

Finally, relationships between families' economic status and children's experiences and outcomes in Childminding settings were considered by Maher, Frestedt, and Grace (2008). This study found infants and pre-schoolers receiving childcare subsidies (indicative of lower economic status) were significantly more likely to experience higher child-adult ratios than those who did not receive subsidies. Whilst providing limited evidence on this issue, these findings underscore the potential for structural inequalities in Childminding services to emerge as a result of disparities in families' economic status.

5.2. Caregiver determinants

Caregiver factors associated with children's outcomes and experiences included childminders' qualifications and training, experience, stress, sensitivity, motivation and beliefs, wellbeing, family income, use of support services and perceptions. Figure 4 summarises these findings, by order of the number of included studies with findings relating to each factor (n=_23).

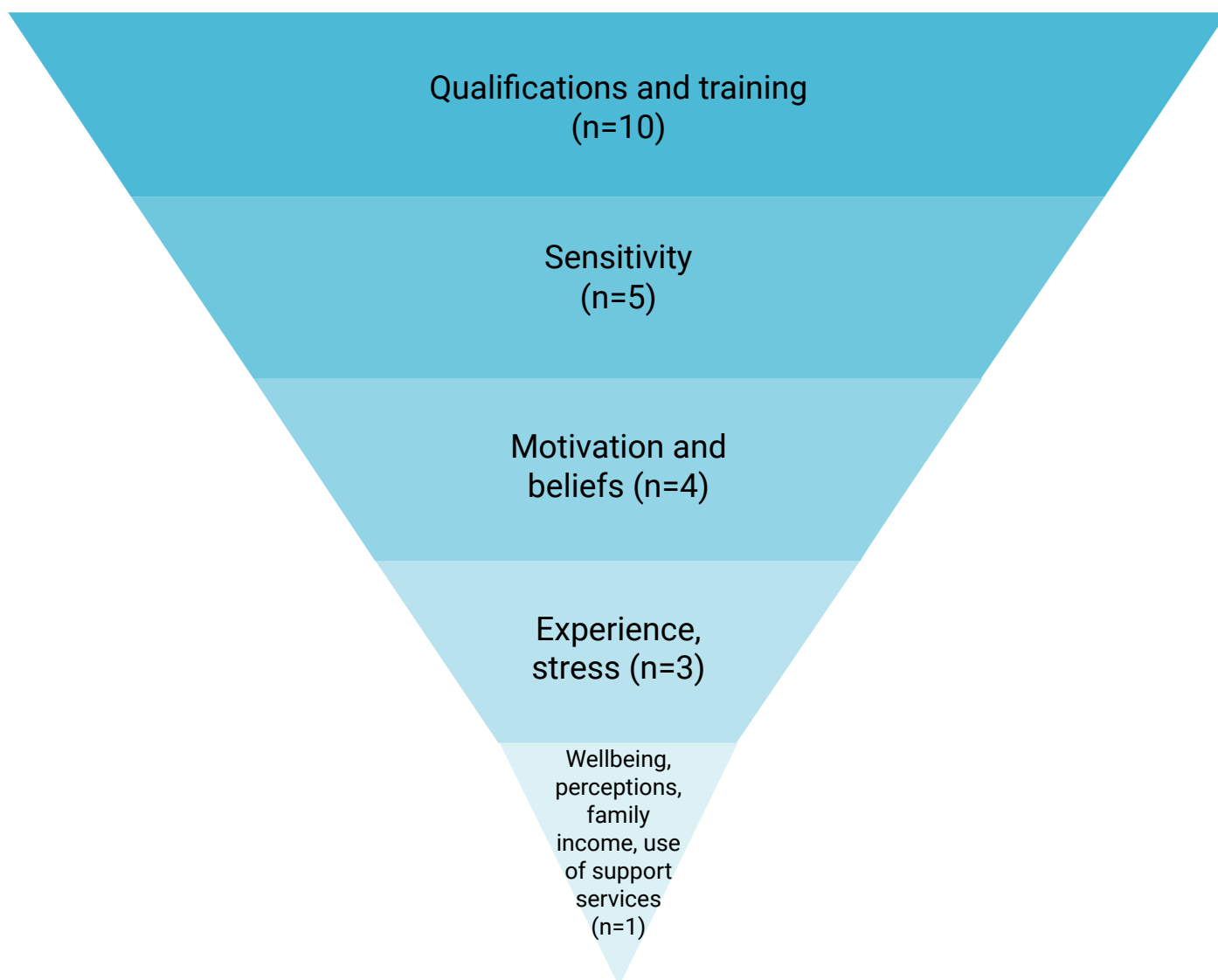


Figure 4 - Caregiver related determining factors

The research findings offer a nuanced understanding of how childminders' education, qualifications and training relate to experiences and outcomes in Childminding settings.

Iruka and Forry (2018) identified childminder education level as a significant predictor of quality, with caregivers in the highest quality group generally possessing more education than those in other groups. Likewise, Schaack, Le, and Setodji (2017) found childminder qualifications to be significantly associated with the quality of care, with higher qualifications resulting in better quality of care. However, they also found that the quality of childminder-child interactions was not solely dependent on the childminder's degree status but rather on whether they had completed early childhood education and care (ECEC) related coursework. This suggests that the specificity of training plays a crucial role in shaping interaction quality. Bigras et al. (2010) reinforce the importance of specialist ECE training, finding a significant association between a diploma in early childhood education and process quality ratings. Further emphasising the significance of specialised ECEC training, Doherty et al. (2006) and Hallam et al (2013) found

specialised training, whether obtained through professional development or degree programs, correlates positively with higher quality scores across different aspects of ECEC programs.

Beyond initial training and qualifications, Hooper (2018) found that ongoing professional development, in the form of coursework and participation in workshops, was linked to better outcomes in learning activities and planning time. Hughes-Belding et al. (2012) provide additional support for the importance of professional development, highlighting its association with better quality care, particularly in educational activities and interactions.

Weaver (2002) reinforces these findings by showing positive associations between formal education, coursework, and participation in training with the quality of care. However, whilst caregiver education, training and qualifications appear to have some influence on the quality of home-based childcare services, Schaack, Le, and Setodji (2017) found mixed results regarding their relationship with children's socio-emotional outcomes. Similarly, Schaack et al. (2017) found no direct relationship between childminders' qualifications and toddlers' cognitive outcomes. Overall, childminders' education, training and qualifications appear to be important factors associated with quality in Childminding settings, particularly when they are specifically ECE related and ongoing in nature.

The studies by Hughes-Belding et al. (2012), Groeneveld et al. (2010a, 2010b, 2016), and Raikes, Raikes, and Wilcox (2005) provide valuable insights into the role of childminder sensitivity in home-based childcare settings. Hughes-Belding et al. (2012) found that more professional development, experience, and child-centred beliefs among providers were associated with higher levels of caregiver sensitivity, emphasising the importance of training and attitudes in fostering sensitive caregiving practices. Additionally, Groeneveld et al.'s (2010a, 2010b, 2016) research highlighted the significant impact of caregiver stress and child temperament on caregiver sensitivity, with higher stress levels and more fearful children correlating with decreased sensitivity. However, their later study (2016) on a video-feedback intervention showed that an intervention designed to enhance caregiver sensitivity did not significantly affect observed child wellbeing overall. Furthermore, Raikes, Raikes, and Wilcox (2005) identified regulatory and educational factors associated with caregiver sensitivity, indicating that higher levels of provider education and lower subsidy density were associated with greater sensitivity.

The extent to which childminders' motivations and beliefs affected children's outcomes and experiences, was discussed in four of the 50 studies included in this rapid review. Doherty et al. (2006) found that childminders' motivations were significantly associated with quality, with providers who stated that they became regulated to meet standards, who enjoyed family childcare and would choose Childminding again as their career, achieving significantly higher quality ratings than other providers. This suggests that intrinsic motivations tied to a genuine passion for childcare and development may drive higher quality care. Hooper (2018) further emphasises the impact of providers' motivations and beliefs on the quality of care, finding career-related motivations (rather than financial or convenience-based) were associated with more frequent learning activities and more time spent planning, indicating a dedication to the profession and a commitment to providing enriching experiences for children. Similarly, providers with progressive beliefs about child-rearing were found to offer more planned learning activities, aligning with contemporary understandings of child development and education.

Conversely, Hughes-Belding et al. (2012) found that, while motivation was initially related to quality, its significance diminished when other factors were considered. However, providers' child-rearing beliefs continued to predict childcare quality even after accounting for structural differences. Providers with more child-centred views tended to score higher on global quality and caregiver sensitivity, emphasising the importance of aligning beliefs with best practices

in childcare. Weaver (2002) reinforces these findings by demonstrating that professional commitment is significantly associated with the quality of care. Providers who are dedicated to their profession and exhibit a strong commitment to childcare tend to offer higher quality care, again reflecting the relationship between intrinsic motivation on caregiving practices. Overall, these findings underscore the importance of understanding providers' motivations and beliefs in shaping the quality of care in early childhood settings. Intrinsic motivations tied to a genuine passion for childcare, along with progressive beliefs aligned with contemporary understandings of child development, were found to be associated with higher quality care. This highlights the need to support childminders to develop a deep commitment to their profession and foster beliefs that prioritise the wellbeing and development of children.

Figure 4 shows caregiver experience and stress were reported as factors associated with children's experiences and outcomes in Childminding settings by three of the 50 studies included in this review. Hooper (2018) found that providers with extensive experience in home-based childcare, specifically more than 20 years, tended to implement more learning activities compared to less experienced providers. Similarly, Hughes-Belding et al. (2012) found a positive association between years of experience and the quality of care, particularly in terms of teaching and interactions. This suggests that as providers gain more experience, they may refine their skills and approaches, resulting in higher-quality interactions with children. However, Vandenbroeck, Slot, and Hulpia's (2021) findings present a contrasting perspective. They found that years of experience were negatively associated with emotional support provided by childminders, with more experienced childminders offering lower emotional support. This unexpected result could potentially indicate a shift in priorities or approaches among more experienced providers, leading to reduced emphasis on emotional support over time. Alternatively, differences in age, personal views and timing of training may influence the levels of emotional support offered by childminders. Overall, these findings highlight the complexity of the relationship between years of experience and the quality of care provided in early childhood settings. While experience may bring benefits, it may also lead to changes in priorities or approaches that could impact specific aspects of care.

Rusby et al. (2013) highlight the association between caregiver stress and caregiving practices. They found that greater caregiver stress was linked to less frequent positive attention towards children and lower reported tolerance for challenging behaviours. However, no direct associations between reported caregiver stress levels and children's negative behaviour or emotional outbursts during interactions were found. This suggests that the relationship between caregiver stress and child behaviour may be mediated by other factors or may manifest differently in different contexts. This was supported by Hughes-Belding et al. (2012) who also found that caregiver stress was associated with harsher discipline and less sensitivity in interactions with children.

Similarly, Groeneveld (2010a, 2010b) observed a negative association between caregivers' perceived stress levels and the quality of their behaviour towards children, with caregivers who experienced higher levels of stress exhibiting lower-quality caregiving behaviour. However, this association was not influenced by working hours, workload, or cortisol change throughout the workday, suggesting that perceived stress has a direct impact on caregiving behaviour. Groeneveld et al. (2010a, 2010b) also found that caregiver stress was significantly related to children's observed wellbeing, indicating a potential indirect relationship between caregiver stress and child outcomes via caregiving practices and interactions. Importantly, the studies discussed above cannot establish whether the relationship between caregiver stress and the quality of interactions and behaviour management is causal, nor can they determine the direction in which any such causal relationship might operate. Nevertheless, these findings underscore the importance of addressing caregiver stress in order to promote positive caregiving practices and enhance outcomes. Strategies aimed at supporting caregivers in

managing stress and challenging behaviour effectively may ultimately contribute to creating nurturing and supportive environments for young children.

Four additional factors, caregiver wellbeing, family income, perceptions, and use of support services, were each identified as factors associated with positive Childminding experiences and outcomes in one study included in this review. Doherty et al. (2006) identified the use of informal networking and participation in library story hours as a predictor of better-quality care in Childminding settings. This suggests that providers who engage in informal networking activities and utilise community resources may offer higher quality care, possibly due to access to support, knowledge sharing, and exposure to diverse learning opportunities.

Luchini et al. (2017) found that childminders were more likely to use negative feeding practices, such as spoon-feeding or offering rewards, if they perceived a child to be a picky eater. As children's eating behaviour was not directly assessed in this study, it is unclear whether children perceived as "picky eaters" differed from those who were not perceived as "picky eaters". Nevertheless, these findings underscore the importance of understanding and addressing caregiver attitudes and beliefs related to child behaviour and caregiver knowledge and skills in relation to positive mealtime practices.

Weaver (2002) examined the association between caregiver wellbeing and the quality of care provided. They found that overall psychological wellbeing was significantly associated with quality of care, indicating that caregivers' mental health may play a role in their ability to provide high-quality care. As with the findings related to caregiver stress, this evidence emphasises the importance of supporting caregivers' mental wellbeing to ensure optimal caregiving experiences and outcomes.

Weaver (2002) also found that family income and compensation were borderline significant predictors of quality of care. While not conclusive, this suggests that financial factors may influence caregivers' ability to provide quality care, potentially through access to resources, training opportunities, or reduced financial stress.

Overall, these findings highlight the multifaceted nature of childminder determinants in influencing children's experiences and outcomes in Childminding services. Addressing caregiver wellbeing, providing support for mealtime challenges, fostering community connections, and ensuring equitable compensation may be valuable considerations for promoting high-quality care and positive outcomes for children.

5.3. Structural determinants

As seen in Figure 5, a range of structural factors were found to contribute to outcomes and experiences for children in Childminding settings.

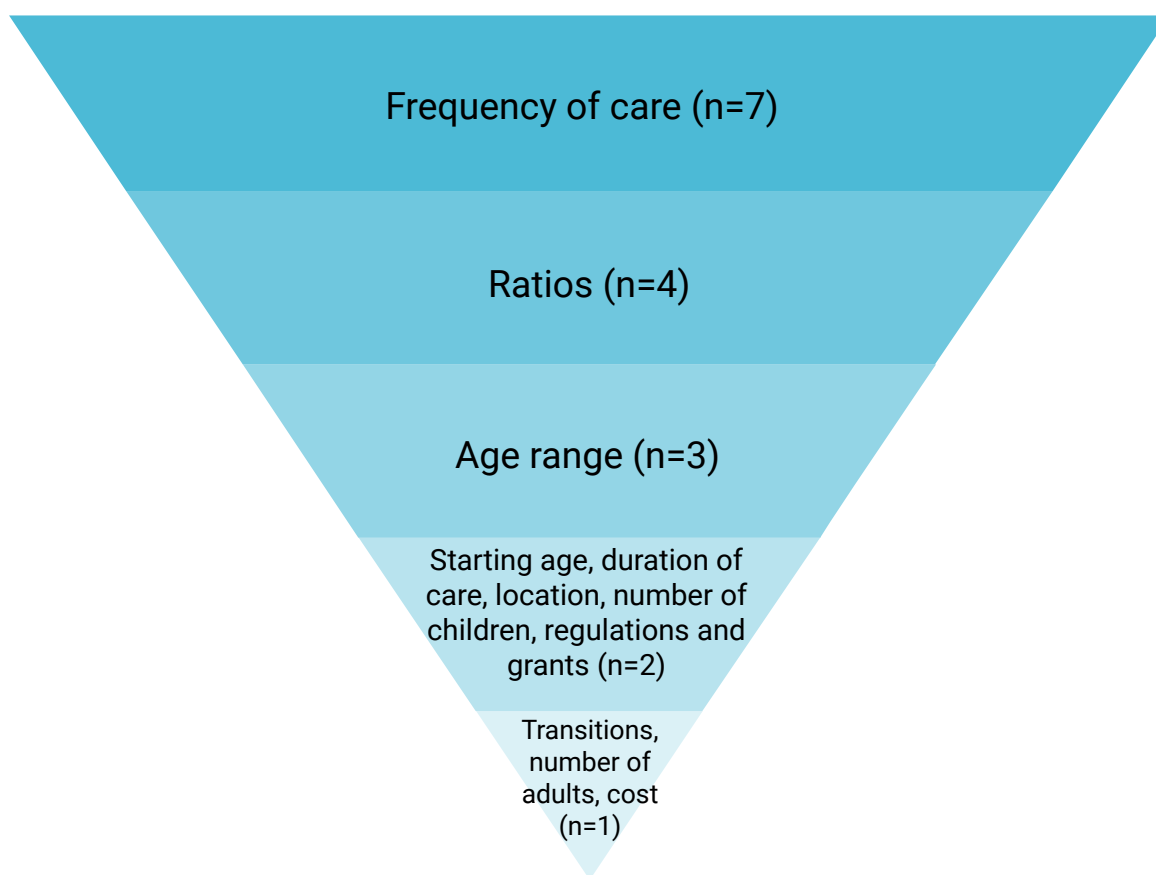


Figure 5 - Structural determinants

Frequency of care was explored as a possible determining factor of outcomes and experiences in Childminding services by seven of the 50 included studies. Lim, Levickis, and Eadie (2022) discovered no significant correlation between hours spent in family day care and language scores. Likewise, Bornstein, Putnick, and Suwalsky (2016) found that the number of weekly hours in Childminding did not influence the emotional relationship between infants and their mother or caregiver. Similarly, Barnes et al.'s (2010) study indicated no significant relationship between childcare hours during infancy and toddlerhood and mother-rated behaviour at 36 months.

However, Averdijk et al. (2022) found more time spent in a Childminding setting before kindergarten was associated with worse behavioural outcomes, identifying a cut-off point of two to three days a week. Lemay and Bigras (2015) reported a nuanced impact of quality and quantity of childcare, with a high-quality setting benefiting children who spent fewer than 35 hours per week in Childminding. Children who spent more than 45 hours per week in a high-quality childcare home were found to present with increased externalising behaviours. Evidence gleaned from the NICHD (2004) established that the total hours spent in childcare homes throughout the first 54 months of life were significantly related to quality of care: children who spent more time in childcare homes tended to experience lower-quality care than children who spent fewer total hours in these settings, particularly in infancy. The overall number of hours of care received in Childminding before 54 months of age was not significantly associated with cognitive outcomes at 54 months of age. A follow-up study (NICHD 2005) found that children who had spent more hours in childcare homes throughout the first 54 months of life performed

worse in tests assessing letter-word identification than children who had spent fewer hours in childcare homes. However, the opposite was true for children's scores in tests assessing practical mathematical problem-solving skills, ability to name objects in pictures, short-term memory and teacher-rated socio-emotional skills, where children did better if they had spent more hours in childcare homes.

Overall, the relationship between the hours spent in Childminding and various developmental outcomes appears to be multifaceted. While some studies found no significant correlation between home-based childcare hours and language scores, others identified a threshold beyond which increased time in Childminding settings, prior to kindergarten, was associated with worse behavioural outcomes. This suggests that the relationship between the frequency of childcare and children's experiences and outcomes may vary depending on factors such as the quality of care, the child's temperament, and the specific developmental domain under consideration.

In consideration of ratios as a determinant of experiences and outcomes in Childminding services, Bigras et al.'s (2010) study determined that lower adult-child ratios were associated with higher process quality ratings, indicating that having fewer children per adult allows for more individualised attention and interaction, contributing to overall quality of care. However, Hughes-Belding et al. (2012) present a contrasting perspective, suggesting that adult-child ratios are largely unrelated to quality, except for a specific association between ratios and harshness in tone and discipline. Providers looking after more children per adult were found to be harsher in their interactions. These findings imply, that while adult-child ratios may not have a direct impact on overall quality, they may influence specific aspects of caregiver behaviour, particularly in terms of tone and discipline. Yamauchi and Leigh (2011)'s study revealed that children in settings with lower adult-child ratios were more open to strangers and unfamiliar places. However, they did not find any association between ratios and children's ability to persist with activities, their response to frustration, or their ability to regulate their behaviour when upset. Overall, these findings suggest that adult-child ratios play a complex role in Childminding settings. While they may influence certain aspects of caregiver behaviour and children's social behaviours, their impact on overall quality and child outcomes may vary depending on other factors such as caregiver practices, setting characteristics, and individual child needs. Ensuring optimal adult-child ratios remains important for fostering positive experiences and supporting children's outcomes.

The age range of the children was considered a determinant of experiences and outcomes in three of the 50 studies included in this review. Riethmuller et al. (2009) highlight the barriers to physical activity in mixed-age groups, such as those commonly found in homebased childcare settings. Participants noted competing needs among children of different ages as a hindrance to implementing physical activity programmes. They emphasised the importance of simple, resource-efficient, and versatile activity programmes that can cater to children across different age groups and be implemented in various indoor and small space environments. Clarke-Stewart (1986) found that proximity to mothers was reduced when groups consisted mainly of younger children, as opposed to mixed-age or older-child groups.

Additionally, children spent more time interacting with infants when proximity to mothers was higher. Ang and Tabu (2018) identified the mixed age group, typical of Childminding settings, as one factor associated with a distinct pedagogy that supports young children's learning. Overall, these findings underscore the complexity of Childminding dynamics and the importance of considering factors such as group composition, activity planning, and caregiver-child interactions in promoting optimal outcomes for children in this type of setting.

As seen in figure 5, the age at which the child first attended a Childminding setting, the

duration of care, the location of the setting, the number of children attending the setting and regulations and grants were identified as determining factors in two of the 50 studies included in this review. According to Howes and Stewart (1987), toddlers played more competently with toys if they had started home-based childcare at a relatively later age (compared with their peers who had started younger) - this was the case even after toddlers' current age and the number of childcare changes had been taken into account. In contrast, Coley et al. (2013) found children who attended full-time home-based care aged two displayed improved teacher-reported learning behaviours and fewer teacher-reported externalising behaviours in kindergarten, while children who were in full-time home-based care at age four had more teacher-reported externalising behaviours compared to those who attended part-time at the same ages. Therefore, it can be seen that the limited evidence on the effects of age of entry into homebased care were mixed with regards to child outcomes and experiences.

The extent to which the duration of care was associated with outcomes and experiences was also mixed. Belsky et al. (2007) found that children who spent time in a childcare home at more time points had better vocabulary scores but more (teacher-reported) conflict with teachers and more externalising behaviour in first grade than children who spent time in childcare homes at fewer time points. Time spent in childcare homes had no relationship with teacher-assessed social skills or socio-emotional development at any age. Similarly, Groeneveld et al. (2016) found months spent with the caregiver and quality of care were significantly associated with caregivers being more sensitive to children who had joined their group more recently. However, global childcare quality was higher in settings where children had spent a longer period of time with that specific caregiver. Child wellbeing was unrelated to the number of months a child had spent with their trusted caregiver (controlled for age). However, the number of months children had spent with their trusted caregiver affected how well an intervention aimed at improving the quality of interactions worked: for children who were unfamiliar with their caregiver, wellbeing increased over time regardless of the intervention (control and intervention group), while for children who knew their caregiver well, only those in the intervention group experienced further improvements in their wellbeing.

These findings highlight the nuanced effects of childcare duration on various aspects of child development and caregiver-child dynamics. While increased exposure to homebased childcare over time may contribute to certain cognitive outcomes, it can also potentially heighten social and behavioural challenges. Furthermore, the quality of care and the nature of the caregiver-child relationship appear to play significant roles in shaping developmental trajectories and the effectiveness of interventions. Understanding these complex interactions is crucial for promoting positive developmental outcomes and enhancing the quality of childcare experiences for babies, toddlers, children and young people participating in Childminding services.

Location, specifically poverty levels and urban density, was reported as a factor that may impact children's experiences and outcomes in Childminding settings. Hooper (2018) found that childminders located in low-poverty communities implemented planned learning activities more frequently and spent more time planning these activities compared to providers in higher-poverty areas. Similarly, providers in urban-dense communities, as opposed to rural areas, were more likely to engage in planned learning activities and allocate time for planning. This suggests that community socioeconomic factors can influence the resources and support available to childcare providers, thereby affecting the quality and scope of educational activities offered to children. Maher, Frestedt, and Grace (2008) found that, overall, ratios did not significantly differ between rural and urban settings, indicating a relatively consistent approach to caregiver-to-child ratios across geographic regions. However, toddlers in rural areas were more likely to experience lower child-adult ratios compared to toddlers in urban areas, and this difference became more pronounced with increasing parent-paid fees. This suggests that while

overall ratios may not vary significantly between rural and urban settings, differences in age groups availing of Childminding services and factors such as parent-paid fees may influence the distribution of child-adult ratios, particularly in rural areas. These findings underscore the importance of considering community characteristics when examining disparities in Childminding provision. They highlight how factors such as poverty levels and urban density can shape the resources, practices, and access to quality childcare services, ultimately impacting children's experiences and outcomes.

Considering the number of children in a Childminding setting, Hooper (2018) found that providers looking after larger numbers of children implemented fewer learning activities but spent more time planning them. This suggests a balancing act between the quantity and quality of learning activities, with providers allocating more time to planning to ensure effective implementation despite the challenges of managing larger groups. In contrast, Bornstein, Putnick, and Suwalsky (2016) found that the number of other infants in the setting was unrelated to infants' relationships with their mothers or carers, indicating that group size may not significantly impact infant-caregiver relationships in this context.

Raikes, Raikes, and Wilcox (2005) highlight the positive association between regulation and global quality in Childminding. They found that stricter regulations were linked to higher overall quality ratings. However, while regulations did not directly impact caregiver sensitivity, they moderated the relationship between caregiver education and sensitivity. In areas with fewer regulations, better-educated childminders demonstrated greater sensitivity in caregiving compared to those with lower levels of education. This suggests that regulations may serve as a framework within which educated providers can effectively implement their knowledge and skills to enhance sensitivity in caregiving practices. Contrastingly, Tang et al. (2020) did not find a significant relationship between years licensed and any quality indicators in family childcare homes. This suggests that the duration of licensure may not be a determining factor in childcare quality in these settings. However, their findings illustrate that grants were associated with improvements in the home environment, particularly in terms of space and furnishings. This implies that financial support in the form of grants may positively influence the physical aspects of childcare environments, contributing to a more conducive and enriching space for children.

Finally, the number of adults, cost of care and number of transitions (i.e. changes in childcare arrangements) were each reported as a determining factor of children's experiences and outcomes in Childminding services in one study. Considering the number of adults, Rusby et al. (2013) discovered that caregivers experienced higher levels of stress when working in isolation. Interestingly, they found that the number of children per adult was not directly related to stress levels once other factors, such as low use of positive attention and density of challenging behaviours, were considered. This suggests that the social context in which caregivers operate, rather than simply the child-to-adult ratio, may play a significant role in determining stress levels. Leach et al. (2008) explored the relationship between the cost of care and the quality of Childminding settings and found that higher fees were associated with better health and safety practices when infants were 10 months old. Additionally, at 18 months old, childminders with higher fees exhibited less punitive behaviours, formed more positive relationships, and engaged in more responsive and sensitive interactions compared to providers with lower fees. This suggests that investing in higher-cost childcare may lead to better quality interactions and relationships between caregivers and children. Howes and Stewart (1987) found that more transitions (i.e., changes in childcare arrangements) had a negative effect on toddlers' competence in peer play (with current age and age at childcare entry taken into account). Whilst this evidence is limited and dated, the stability of childcare arrangements may impact children's outcomes.

5.4. Pedagogical determinants

As seen in figure 6, pedagogical determinants included activities and interactions, noise, global quality, structure of environment and inclusivity.

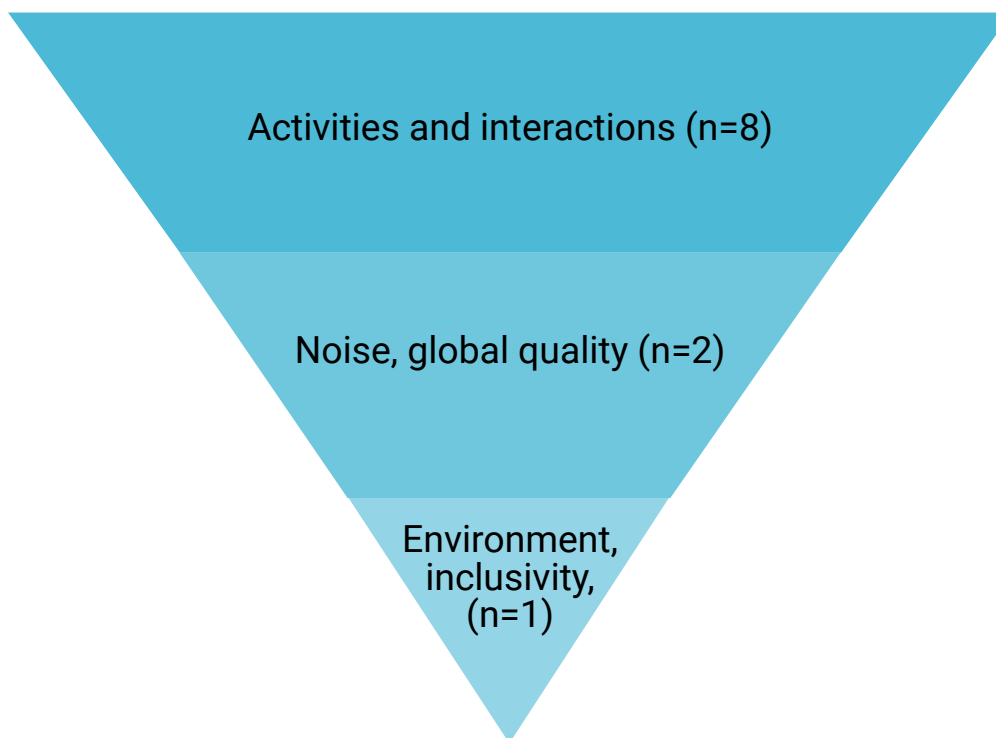


Figure 6 - Pedagogical determining factors

The activities and interactions carried out in Childminding settings were reported as determining factors in eight of the 50 studies included in this review.

Clarke-Stewart (1986) found that children's language outcomes were significantly influenced by childminder behaviours and the type of activities they engaged in. Positive associations were found between frequent caregiver-child interactions, responsiveness, and story reading and better language outcomes. Conversely, other caregiver behaviours, such as helping or directing a child, and some child behaviours, such as spending more time playing alone or watching peers, were associated with poorer language outcomes. Clarke-Stewart (1986) also explored the relationship between sociability to strangers and caregiver-child interactions. Positive interactions between caregiver and child, as well as control exercised by the caregiver, were positively associated with sociability to a stranger in the home. In contrast, negative interactions, aggressive behaviours, and time spent watching peers or playing alone were associated with lower sociability.

Rusby et al. (2008) and Dettling et al. (2000) highlighted findings that enriched environments, supportive interactions, and attention were related to children's behaviour and cortisol patterns. Environments characterised by organisation, planning, supportive interactions, and effective behaviour management were associated with more positive behaviour and reduced challenging behaviours in children. Moreover, higher levels of attention and stimulation were associated with healthier cortisol patterns, indicating the importance of supportive environments in regulating stress responses in children.

Iruka and Forry (2018) extend these findings by demonstrating an association between childcare quality and children's academic outcomes. Higher quality childcare settings, characterised by good process quality and provision of learning activities, were associated with

higher reading and math scores in preschool and kindergarten, highlighting the potential long-term benefits of quality childcare experiences.

Vandenbroeck, Slot, and Hulpia (2021) further emphasise the importance of activities in shaping the quality of childcare environments. Guided play was associated with higher quality indicators for both babies and toddlers, pointing to the benefits of structured activities in promoting educational and emotional quality.

Wright (2004) and O'Regan et al. (2021) acknowledged many of the activities and interactions associated with Childminding occur outside of the childminder's home, with outings in the community (parks, libraries etc.) commonplace in this form of care. This feature provides diverse learning opportunities which may contribute to positive outcomes and experiences.

O'Regan et al. (2021) also found that Irish childminders prioritise relationship-driven, child-led learning opportunities through everyday experiences. Ang and Tabu (2018) identified a distinct pedagogy in home-based childcare settings, characterised by consideration of children's interests and flexible activity planning. Overall, these findings highlight the importance of appropriate activities and interactions in Childminding settings. Diverse, flexible learning opportunities, and supportive environments may contribute to positive experiences and outcomes for babies, toddler, children and young people who attend Childminding settings.

Considering the impact of noise on children's experiences and outcomes in Childminding settings, Groeneveld et al. (2010a, 2010b) initially found that noise levels were not significantly related to children's wellbeing or cortisol levels. However, Linting et al. (2013) offer a more nuanced perspective by examining both the average noise level and noise variability in childcare settings. Linting et al. (2013) found that both the average noise level and noise variability were significantly related to child wellbeing with higher noise levels and greater noise variability being associated with lower child wellbeing. These findings underscore the importance of considering not only the average noise level but also the variability of noise exposure in childcare environments. While noise levels within a certain range may not have a significant impact on child wellbeing, exceeding critical thresholds can lead to detrimental effects. Therefore, efforts to mitigate noise exposure and maintain a conducive auditory environment in Childminding settings may support positive experiences and outcomes.

Considering quality as a determining factor, Howes and Stewart (1987) found the quality of care in Childminding settings significantly influenced toddlers' engagement in play with objects and adults. This suggests that high-quality childcare environments, characterised by supportive interactions, stimulating activities, and attentive caregiving, create opportunities for toddlers to explore, learn, and interact in meaningful ways. Iruka and Forry's (2018) study extends these findings by examining the long-term effects of childcare quality on children's academic outcomes in preschool and kindergarten. They found that childcare quality in home-based settings at 36 months was predictive of children's reading and math scores in preschool and kindergarten, even after controlling for various demographic factors and home learning stimulation. Specifically, children attending settings with good process quality and regular academic activities achieved higher scores in reading and math compared to children in lower-quality childcare settings with fewer academic activities.

Finally, the structure and inclusivity of the environment were each reported as a determining factor of children's experiences and outcomes in Childminding in one study. In terms of the environment, Clarke-Stewart (1986) found children exhibited greater sociability in well-structured childminders' homes with fewer adult decorations, despite the presence of more dangers, suggesting a well-structured environment may provide children with a sense of security and confidence, enabling them to interact more positively with strangers. Knoche et al. (2006) examined the impact of inclusion on the quality of home-based childcare. They found that inclusive home-based providers scored lower on global quality and specific aspects such

as space and furnishings, and language and reasoning activities compared to non-inclusive providers. This highlights the challenges that inclusive providers may face in maintaining high-quality childcare environments, potentially due to the additional complexities associated with serving children with diverse needs.

Overall, these findings underscore the pivotal role of activities and interactions in shaping children's experiences and outcomes in Childminding settings. The emphasis on flexible, relationship-driven, child-led learning opportunities through everyday experiences reflects the unique strengths of Childminding. Moreover, the acknowledgment of diverse learning opportunities outside the childminder's home, such as community outings, highlights the rich and varied experiences available in these settings. Additionally, the importance of considering noise levels and the structure of the environment was reported. While noise within a certain range may not significantly impact child wellbeing, attention to noise variability and environmental structure is important for creating conducive learning and care environments. Furthermore, the quality of childcare, encompassing supportive interactions, stimulating activities, and inclusive practices, emerges as a critical predictor of children's engagement and academic success. However, challenges persist, particularly for inclusive providers, who may face difficulties in maintaining high-quality environments due to the complexities associated with serving children with diverse needs.

6. Conclusion

In concluding this critical and comprehensive 'rapid review', a range of empirical findings that shed light on previously underexplored issues within the realm of Childminding practices have revealed a complex range of factors relating to the child, caregiver, structure and pedagogy that may shape the experiences and outcomes of infants, toddlers, children, and young people in Childminding. It can be acknowledged that the findings are complex and nuanced, with a degree of consensus being difficult to determine on occasions. Despite this, four key themes have emerged as lessons we can glean about the fundamental determinants of experiences and outcomes for babies, toddlers, children, and young people who participate in Childminding.

6.1. The value of a child-centred approach

Firstly, the findings generated from this synthesis of literature pertaining to Childminding point towards the importance of a nurturing child-centred approach. At the child level, catering for the individual needs and interests of every child/young person in the Childminding setting is paramount, as is appreciating and suitably addressing their unique differences to ensure a positive and enriching experience which affords a range of holistic outcomes for all concerned. In this way, personalised knowledge and consideration of the individual children and community to which the cohort of children in the Childminding setting belong is imperative, not only in terms of supporting the children, but also catering for the needs of the family as a whole.

6.2. The need for a passionate, committed and skilful caregiver

Secondly, at a caregiver level, the findings suggest that experiences and outcomes can be suitably enhanced when the childminder is highly motivated and passionate about children and young people, has a genuine interest in them and cares about their wellbeing and that of their families. Childminders who are deeply committed to their profession and who keep abreast of best practice within the field of Childminding also appear to significantly impact outcomes and experiences positively. Likewise, childminders who take care of their own wellbeing and who manage their own stress and challenges by means of supportive networks are better able to create nurturing and supportive environments for all children. Yet, in addition, the findings also emphasise the need for caregivers to be appropriately skilled by means of suitable qualifications and training within the field of Early Childhood Education and Care as a means of enhancing the overall quality of the experience and the learning outcomes.

6.3. The necessity of having a flexible, accessible and suitably funded Childminding service

Thirdly, while at a structural level the findings are intricate to unravel, and a clear consensus is not consistently available, better outcomes and experiences appear to be ensured when a flexible model of Childminding is provided. A degree of flexibility in terms of number of hours, overall frequency of care and age of entry are said to be beneficial in terms of meeting the needs of a diverse community, and in so doing, enhance the quality of the 'lived reality' of the Childminding experience and ensure better overall outcomes. Establishing optimal adult-child ratios also appear significant in terms of fostering positive experiences and supporting children's outcomes. The findings also point to the importance of investing in the physical environment of Childminding settings and indeed in higher cost Childminding more generally to improve the quality of the Childminding experience, particularly in terms of relationships and interactions. However, consideration at a political level must also be given to enabling all children and their families the opportunity to avail of such quality provision and ensure enhanced accessibility for all children, irrespective of their socio-economic status.

6.4. The importance of a relational and playful pedagogy

Finally, the findings affirm the importance of positive interactions and respectful relationships (in particular, the nature of the relationship between the caregiver and the child) in determining quality experiences and holistic outcomes in Childminding. Such a relational pedagogy appears to play a significant role in shaping children's learning and development and ensuring high quality process quality in practice. Understanding these complex interactions is crucial for promoting positive developmental outcomes and enhancing the quality of childcare experiences for babies, toddlers, children and adolescents participating in Childminding services.

In addition, guided play is associated with high-quality learning (i.e. both educational and emotional learning) where the activities are playful in perspective but appropriately learning-focused and where the childminder is suitably engaged in the learning process with the children. Additionally, offering a wider range of experiences was associated with higher educational quality, especially when within an appropriately resourced and conducive environment for playful learning to take place.



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Appendix 1: Sample search string (APA PsychINFO)

((title: (outcome*) OR title: (experienc*) OR title: (impact*) OR title: (effect*) OR title: (predict*) OR title: (associat*) OR title: (correlat*) OR title: (causal*) OR title: (increas*) OR title: (improve*) OR title: (improving) OR title: (influenc*) OR title: (affect*) OR title: (chang*) OR title: (revers*) OR title: (decreas*) OR title: (reduc*) OR title: (worse*) OR title: (higher) OR title: (lower)) OR (abstract: (outcome*) OR abstract: (experienc*) OR abstract: (impact*) OR abstract: (effect*) OR abstract: (predict*) OR abstract: (associat*) OR abstract: (correlat*) OR abstract: (causal*) OR abstract: (increas*) OR abstract: (improve*) OR abstract: (improving) OR abstract: (influenc*) OR abstract: (affect*) OR abstract: (chang*) OR abstract: (revers*) OR abstract: (decreas*) OR abstract: (reduc*) OR abstract: (worse*) OR abstract: (higher) OR abstract: (lower))) AND ((title: ("home-based childcare") OR title: ("home-based daycare") OR title: ("home childcare") OR title: ("family daycare") OR title: (childmind*) OR (title: ("family care" AND -elderly AND -dementia AND -nurse* AND -nursing AND -hospital AND - "health care" AND -cancer AND -chronic AND -Alzheimer* AND -disease* AND -disorder* AND -death AND -dying AND - "end-of-life" AND -foster AND - "care home")) OR title: ("in-home childcare") OR title: (ECEC) OR title: ("school-age childcare") OR title: ("afterschool") OR title: ("out-of-school care and recreation")) OR (abstract: ("home-based childcare") OR abstract: ("home-based daycare") OR abstract: ("home childcare") OR abstract: ("family daycare") OR abstract: (childmind*) OR (abstract: ("family care" AND -elderly AND -dementia AND -nurse* AND -nursing AND -hospital AND - "health care" AND -cancer AND -chronic AND -Alzheimer* AND -disease* AND -disorder* AND -death AND -dying AND - "end-of-life" AND -foster AND - "care home")) OR abstract: ("in-home childcare") OR abstract: (ECEC) OR abstract: ("school-age childcare") OR abstract: ("afterschool") OR abstract: ("out-of-school care and recreation"))))

Grey literature search strings:

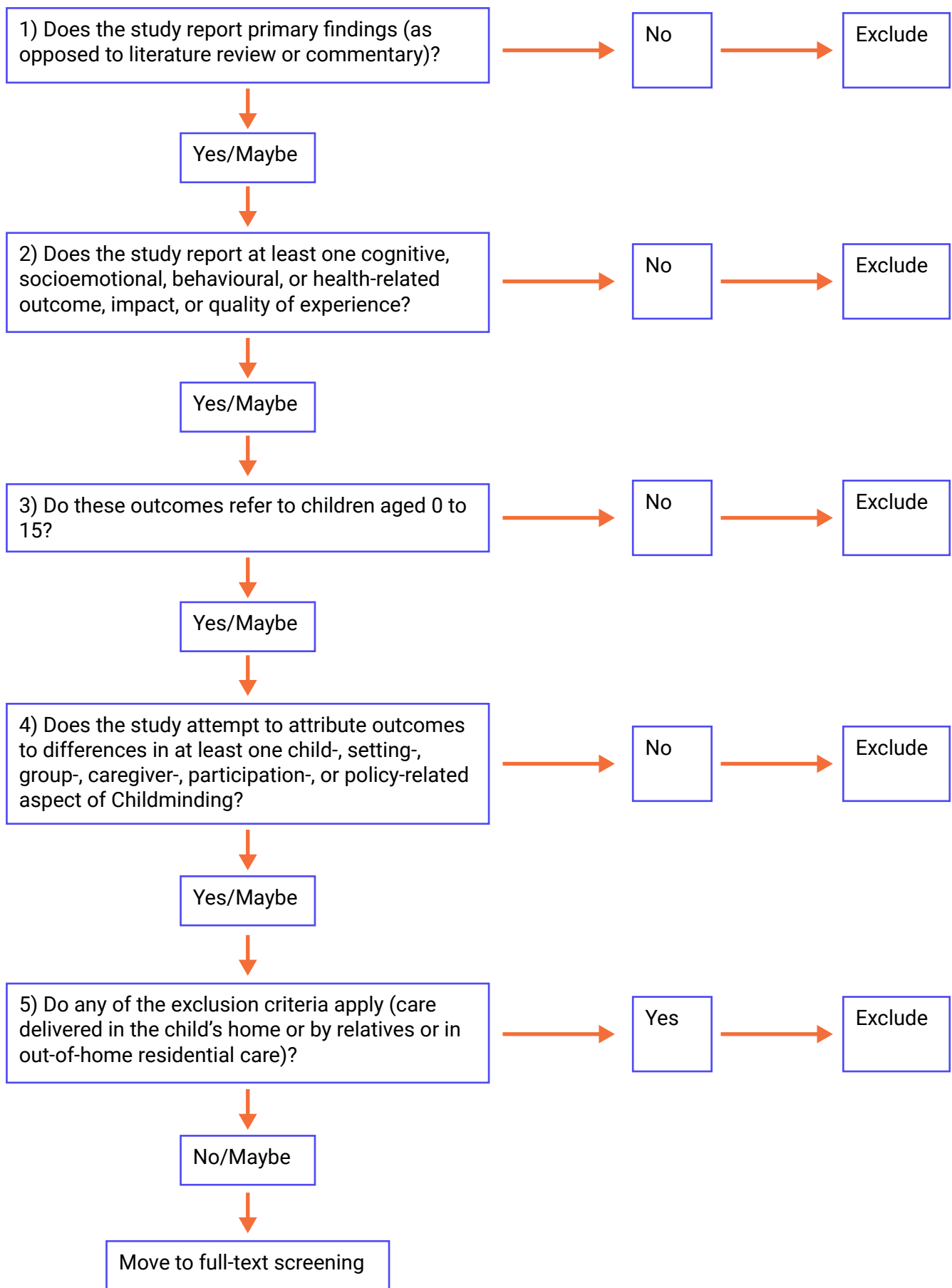
Google: (Childminding OR "home-based childcare") AND (outcomes OR experiences)

<https://barnardos.org.nz/>: "home-based childcare" AND (outcomes OR experiences)

<https://knowledge.barnardos.ie/>: outcomes OR experiences, filter: Childminders/Childminding

Appendix 2: Screening tools

Title- and abstract screening



Full-text screening

Full-text screening follows the same process as title- and abstract screening, with the screening questions detailed below.

- 1) Does the study report primary findings (as opposed to literature review or commentary)?
[No= Wrong study design]
- 2) Are the study subjects either children or childminders? **[No= Wrong patient population]**
- 3) Does the study report on child outcomes or quality of experience or impact on caregiver practice (caregiver VIEWS, VALUES or ATTITUDES without evidence of impact on practice would be excluded)? **[No= Wrong outcomes]**
- 4) Does the study contain clearly disaggregated qualitative or quantitative data on Childminding (as opposed to Childminding and other forms of childcare reported on together)?
[No= Wrong setting]
- 5) Does the study compare outcomes within Childminding (as opposed to outcomes by setting type)? **[No = Wrong comparator]**
- 6) Does the study include at least one reliable and valid measure of outcomes or experience?
[No= Wrong study design]

Appendix 3: Data Extraction Tool

General information	
Study ID	
Reference of publication that data are extracted from	
Country in which the study was conducted	
Characteristics of included studies	
Methods	
Aim of study (state main research questions)	
Study design	• Randomised Controlled Trial
	• Non-randomised experimental study
	• Cohort study
	• Cross sectional study
	• Case control study
	• Qualitative research
	• Mixed methods study
	• Other (detail)
Independent variables measured (e.g. hours in childcare per week - Only include variables for which there are Childminding-related outcome data)	
Control variables measured (e.g. mother's education - Report all control variables measured)	
Outcome variables measured (e.g. language outcomes at 4 years - Only report outcome variables for which there are Childminding-related outcome data)	
Measures used (e.g. Woodcock Johnson Achievement and Cognitive Batteries - Only report instruments used to measure variables relevant to data reported in relation to Childminding)	
Data collection modes (e.g. observation, telephone parent interview... - Only report modes relevant to data reported in relation to Childminding)	
Study start date	
Study end date	

Appendix 4: Quality appraisal questions

Screening questions (for all types)

S1. Are there clear research questions?

S2. Do the collected data allow to address the research questions?

Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.

Qualitative:

1.1. Is the qualitative approach appropriate to answer the research question?

1.2. Are the qualitative data collection methods adequate to address the research question?

1.3. Are the findings adequately derived from the data?

1.4. Is the interpretation of results sufficiently substantiated by data?

1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?

Quantitative randomised controlled trials

2.1. Is randomisation appropriately performed?

2.2. Are the groups comparable at baseline?

2.3. Are there complete outcome data?

2.4. Are outcome assessors blinded to the intervention provided?

2.5. Did the participants adhere to the assigned intervention?

Quantitative non-randomised trials

3.1. Are the participants representative of the target population?

3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?

3.3. Are there complete outcome data?

3.4. Are confounders accounted for in the design and analysis?

3.5. During the study period, is the intervention administered or exposure occurred as intended?

Appendix 5: Quality appraisal of included studies (Mixed Methods Appraisal Tool (Hong et al., 2018))

Quantitative Randomised Controlled Trials						
Study	Is randomisation appropriately performed?	Are the groups comparable at base line?	Are there complete outcome data?	Are outcome assessors blinded to the intervention provided?	Did the participants adhere to the assigned intervention?	Comments
Groeneveld 2016	Can't tell*	Yes	No**	Yes	Yes	* "Random numbers" were used, but there is insufficient information on the exact procedure, ** "One caregiver in the control group did not complete the post-test because she cancelled all appointments. In addition, one of the target children in the intervention group left childcare, because his parents moved to another region of the Netherlands. Scores on all measures (global quality, sensitivity, and wellbeing) during baseline and pretest, did not differ from the other caregivers' and children's mean scores."
McCabe 2011	Can't tell	Can't tell	Can't tell	Yes	Can't tell	Article in industry publication provided minimal information on evaluation design
Rusby 2008	Can't tell*	Can't tell**	No***	Yes	No****	*No details on randomisation procedure **no details on group characteristics ***maximum likelihood estimation was used to deal with missing data **** 8 per cent of caregivers dropped out of the study over time

Quantitative Non-Randomised Studies						
Study	Are the participants representative of the target population?	Are measurements appropriate regarding both the outcome and intervention (or exposure)?	Are there complete outcome data?	Are the confounders accounted for in the design and analysis?	During the study period, is the intervention administered or exposure occurred as intended?	Comments
Dowsett 2008	No*	Yes	No**	Yes	N/A	*"Comparisons with the census data for the hospital catchment areas demonstrated that the sample demographics did not differ from those for the populations from which they were drawn. Over time, however, families lost to attrition were significantly more likely to be low-income, African American, single parent families, with lower levels of maternal education relative to those who remained in the study", ** " For a variety of reasons – caregiver or parent refusal or inability to schedule child-care visits within the 2-month assessment windows – it was not possible to observe all eligible settings. Consequently, observations were completed in 82 per cent of eligible child care arrangements at age 2, 83 per cent at age 3, and 86 per cent at age 4.5. A higher proportion of the unobserved group were from the southern sites, were in family childcare homes, or were with grandparents and fathers (particularly at later ages), and the families of children in care settings that were not observed had significantly lower income-to-needs and lower maternal education than those in the observed groups."

NICHD 2004	Yes (at baseline)	Yes	No*	Yes	N/A	* The 77 (5.64 per cent) families not included because of missing data differed significantly ($P < 0.05$) from the included families in having lower levels of maternal education ($M = 12.6$ years versus 14.2 years) and more traditional parenting attitudes ($M = 76.7$ versus 74.3). The groups did not differ on child sex, ethnicity, presence of partner, income, number of children in the household, maternal depression, or hours of care in the first 18 months in centers, child care homes, or relative care. ... At 54 months, 1079 children and their parents were still enrolled in the study and were included in at least one of the analyses of child outcomes reported in this paper. Actual numbers in each analysis vary because of missing data."
NICHD 2005	No*	Yes	No*	Yes	N/A	* "Children were included in our analyses if they had had at least one outcome measure collected between 4.5 years of age and Grade 3 and had been assessed in terms of quality, hours, and type of child care. (...) The participants differed from the 492 children who were recruited but not included in the analysis sample (all differences significant at $p < .001$). Mothers of participants had more education ($M = 14$ years vs. 13 years) and were more likely to have a husband or partner in the household between birth and 54 months of age ($M = .86$ vs. $.74$) Participating children were more likely to be white, non-Hispanic (79% vs. 66%), and their families had higher family incomes as determined by their average income/needs ratio between birth and 54 months of age ($M = 3.80$ vs. 2.70)"

Averdijk 2022	Can't tell*	Yes**	No**	No***	N/A	* Participants appear to be representative at baseline, but certain immigrant groups were more likely to drop out over time. ** Participation rates vary at different time points from 86.4 per cent to 68.5 per cent of the target sample. ** Childcare history was obtained retrospectively at age 7, and while reliability is discussed in detail, it remains questionable how accurate parents' recollection really is. *** "Our analyses did not include control variables for the interventions, because these took place after the period of external childcare and had minimal effects"
Barnes 2010	No*	Yes	No*	Yes	N/A	* Sample was representative of local area at baseline, but 143 did not complete Adaptive Social Behaviour Inventory (ASBI): "Non-respondents were younger, the family had a lower SES/education score, they had more adverse home conditions and more neighbourhood deprivation. They were observed to be less sensitive (10 & 18 months) and less warm and stimulating (36 months) and home environment quality was lower at 36 months."
Belsky 2007	Can't tell*	Yes	No*	Yes	N/A	No comparisons with general population, some noted attrition (ref to wider NICHD ECCRN re sampling) - 291 for complete data on predictors and outcomes (full sample initially 1,364 families, before formal withdrawal/ time wave attrition).
Bigras 2010	Can't tell*	Yes	Can't tell**	Yes	N/A	No comparison with general population/ **no attrition info
Bornstein 2007	Can't tell*	Yes	Yes	Yes	N/A	* No comparison with general population.
Bornstein 2016	No*	Yes	No**	Yes	N/A	*All mothers were European-American, married, and living with their husband. Families were of middle- to high socio-economic status ** '(One additional family using FCC was seen, but the provider did not interact with the target infant for 75 per cent of the recorded hour; because of this low level of interaction, this infant-caregiver dyad could not be coded and the case was excluded from analyses.)'

Clarke-Stewart 1986	No*	Can't tell**	Can't tell***	No****	N/A	* "k. As a result of our selection, our sources of names and subjects' willingness to participate in the study, the final sample consisted of families who were predominantly white (12 per cent were black, 2 per cent asian, and 1 per cent hispanic) and of middle- and professional-class status (about one-quarter were of lower social status", ** Tests and observational measures not specified , *** attrition data not reported **** Only bivariate correlations are reported
Coley 2013	No*	Yes	Yes**	Yes	N/A	**"Children who died or were adopted prior to 9 months of age and children born to mothers under age 15 were excluded from the sample." **Attrition is reasonably low and sample weights were created to adjust the sample to be nationally representative and to correct for attrition biases. Within the sample of children followed through kindergarten entry, there was a minimal amount of missing data, ranging from 0 per cent to 1 per cent on EEC and covariate variables.
Dettling 2000	Can't tell*	Yes	No***	Yes***	N/A	*Information missing but unlikely to be representative due to sampling strategy, ** "In cases where sufficient saliva was available in only one sample for a given time point and context, the value based on that sample was included into the analyses. This happened in 8.5 per cent of the cases for the home-based childcare group" *** "The relationship between setting characteristics and aspects of family and child behavior that might qualify the results were explored by means of multivariate analysis and correlations respectively. ... The stepwise regression showed that both quality of focused attention/stimulation and negative/under-controlled temperament contributed independently to the prediction of cortisol changes over the day at childcare"

Doherty 2006	Can't tell*	Yes	Can't tell**	Yes***	N/A	* "The recruitment procedures and the voluntary participation preclude knowing the extent to which the sample is statistically representative of all regulated providers in Canada who shared the eligibility criteria that we imposed. Since participation required both agreeing to be observed and completion of a written questionnaire, it is likely that providers fluent in English or French and with higher levels of formal education and self-confidence would be more likely to volunteer than those with less education or self-confidence. As indicated in Table 1 we did, however, obtain a sample with a range of formal educational levels and child care training." ** It is unclear whether background information questionnaires were completed by all providers who took part in observations. *** A range of factors are taken into account.
Groeneveld et al. 2010	No*	Yes**	No***	Yes****	N/A	*Parents of almost all participating children were Dutch. Sampling method and reported reluctance to participate make it likely that sample differs from general population in other respects as well. **Cortisol measurement methods are adequate. However, samples were taken and times recorded by parents and caregivers rather than researchers, which may have affected adherence to protocol (e.g. not eating before sampling, correct timing etc.). *** "In total, 12 per cent of the saliva samples were not mailed by parents to the laboratory, and 18 per cent of the tubes did not contain enough saliva for the immunoassay. Missing samples were only imputed for children who had a maximum of one missing sample per day. A total of 79 children with complete sample sets of a childcare day (of all four time points) were used in the analyses. Of these children, a total of 66 children also had a complete cortisol sample set for the day at home. We also examined diurnal change scores using children's cortisol levels sampled at 11 AM and 3 PM at childcare only (see Data analysis). These data were available from 98 children. No significant differences were present in wellbeing or quality of care (global quality, sensitivity, and noise) between the group of children with and without missing cortisol samples." **** Age and sex were taken into account

Gunnar 2011	No*	Yes**	No***	Yes	N/A	<p>* “ Median family income was \$76,000–\$100,000, with the families of 11 children earning less than \$50,000 and the families of six children earning more than \$151,000. Most (93 per cent) were Caucasian non-Hispanic.” ** “ To determine the actual time of sampling, the cotton dental rolls were supplied in a bottle with a MEMS V Track Cap (Aardex, Zug, Switzerland) which automatically recorded the time when the container was opened. Use of such devices allows verification of compliance with sampling protocols and also increases compliance (Kudielka, Broderick, & Kirschbaum, 2003). The care provider also completed a brief diary on each day of sampling, recording timing of sample, nap times, and meal times. The data from the MEMS cap and diary were examined to determine whether the care provider had complied with the instructions. None of the care providers for children in this report deviated from protocol.” **** “Of the 107 children in this report, 92 had home cortisol data at T1. ... Three children were missing a parent CBCL report, and two children were missing a care provider report; no child was missing both. ... Because of the potential for the missing data to create bias, we computed all analyses that had missing data with and without imputation. ... correlations computed with imputation were comparable to those computed without imputation.”</p>
Gunnar 2010	Can't tell*	Yes**	No***	Yes	N/A	<p>* Sample is not compared to general population, but contains few children from very disadvantaged backgrounds. **cotton dental rolls were supplied in a bottle with a MEMS V Track Cap. *** Twenty children were removed prior to assaying saliva for cortisol because the care provider deviated by more than 1.5 hr in the timing of nearly all of their samples, resulting in the child having no usable cortisol data. The 151 with usable samples are described in this report. Parents were also asked to collect samples using the same protocol on 2 days when the child did not attend day care. ... There were 108 children with a sufficient number of home samples for analysis. Comparisons of child-care cortisol for those with and without home cortisol measures yielded no significant (all ps > .10) differences for morning or afternoon levels or for change over the day.”</p>

Hallam 2013	Yes	Yes	Yes	No	N/A	
Hooper 2018	Can't tell*	No**	No***	Yes**	N/A	* Due to sampling procedures, unlisted providers may not be representative. Low-income areas were oversampled. ** All data were based on provider self-report. This is not a reliable measure of instructional practices. ***All listed and unlisted providers who had valid data on the outcome variable of implementing planned learning activities were included in the sample. Of the 3806 listed providers, 104 (2.7%) had missing data on this variable and were excluded from the sample, resulting in an analytic sample of 3702 listed providers. Seven unlisted paid providers had missing data on the outcome variable and were excluded, which resulted in an analytic sample of 422 unlisted paid providers. An additional 105 listed providers and 35 unlisted paid providers were missing data on the outcome variable of planning time and were therefore excluded from analyses with planning time as the outcome.
Howes 1987	Can't tell*	Yes	Can't tell**	Yes	N/A	*Sample was heterogeneous, but no comparative population data provided. ** No information on attrition or missing data given.
Hughes-Belding 2012	Can't tell*	Yes**	Can't tell***	No	N/A	*Sample not compared to general population **With reservations on self-reported education and hours of CPD *** No information on attrition or missing data.
Iruka 2018	No*	Yes**	Can't tell***	Yes	N/A	* Low income children were oversampled, children who did not understand English or Spanish were not assessed. ** frequency of literacy and numeracy activities and caregiver education measured by caregiver report. *** no info on attrition or missing data
Jiang 2023	Can't tell*	Yes	No**	No	N/A	* No comparative population data reported ** numbers in child characteristics table don't add up, but no explanation given (lack of consent?)
Kerr 2022	Can't tell*	Yes*	Yes	No	N/A	* No comparison with general population.

Knoche 2006	Can't tell*	Yes	No	Yes**	N/A	* Survey sample was representative, but observation sample was randomly selected from willing respondents and likely not representative of general population. ** the interaction between inclusion status and type of care since type of child care is related to child care quality. ... , a statistically significant interaction effect was found between inclusion status and type of care that modifies the statistically significant main effects found for both inclusion status and type of care”
Leach 2008	Can't tell*	Yes	No***	No***	N/A	* No info on sampling procedure ** Not all carers agreed to be observed. “Those observed contained a smaller proportion of non-white children, and the mothers of those observed had a significantly higher average occupational status” No info on attrition/missing data re parent interview. ***Correlations only
Lemay 2015	No*	Yes	Can't tell	Yes	N/A	* “Compared with the original sample of the YCLE project, participants in this subsample were significantly more likely to come from families with a household income above Statistics Canada’s low income threshold ($\chi^2(1, 188) = 14.10, p < 0.05$) and have mother who had attained a high school diploma ($\chi^2(1, 188) p = 0.03$).”
Lim 2022	No*	Yes**	No ***	Yes	N/A	* Target population was children experiencing adversity but Exclusion criteria included women with limited spoken English or experience of critical events during pregnancy or birth (which may be associated with adversity).” ** Quality of care was measured using a proxy measure of existing quality ratings at setting level. Quality experienced by children within these settings may vary between individual children, esp. quality of interactions ***”Missing data was due to mothers not having permanent care of the child, living circumstances not permitting assessment, child refusal or unable to complete assessment. Given missing data may be for those in the most disadvantaged circumstances or for children who found the assessment too difficult, our findings may underrepresent the proportion of children experiencing language difficulties in this cohort. “

Linting 2013	No*	Yes	No**	Yes	N/A	* "Most children (97 per cent) and most of their parents (93 per cent) were born in the Netherlands. All children in the sample were growing up in two-parent families..." ** The data set we used contained 88 complete cases, 11 cases with one missing value, and four cases with two missing values. We multiply imputed missing values (five times) using predictive mean matching in SPSS" (details in article).
Luchini 2017	Can't tell*	No**	Can't tell	No	N/A	* No comparison with general population , ** Mealtime strategies by parent/caregiver report - direct observation would have been preferable
Maher 2008	Can't tell*	No**	No***	Yes	N/A	*No discussion of differences between respondents and refusals, ** parent-reported group size and ratio unlikely to be accurate *** Cases with missing values on independent variables were dropped, except for household income which was imputed.
Raikes 2005	No*	Yes	No**	Yes	N/A	*Providers who agreed to be observed were better educated, more regulated, cared for fewer children on subsidy, and received more training hours than participants in the (representative) total survey sample. **"Data were missing for 15 of the observations, leading to a sample of 120 used for regression analyses"
Rusby 2017	Can't tell*	Yes	Can't tell	No	N/A	*Providers were representative of their area in terms of race/ethnicity, but no comparative data are reported for other characteristics.
Rusby 2013	Can't tell*	Yes	Can't tell	Yes	N/A	*No comparative population statistics reported
Schaack 2017	Yes	Yes	No*	Yes	N/A	Less than 10 per cent of missing data on most variables. Multiple imputation was used to deal with missing programme information.
Sluiter 2023	No*	Yes	No**	Yes	N/A	*Children and their families are comparable to parents and children in general Dutch ECEC settings in terms of income, education, nationality etc., **Data were missing at random. Single imputation via expectation maximization was used to deal with missing data.

Tang 2020	Yes	Yes	Yes	No	N/A	
Vandenbroeck 2021	Can't tell*	Yes	Can't tell	No	N/A	*The original sample was randomly selected from lists of all licenced and affiliated providers without further stratification. Refusal rates were high and no data is reported in how participants differed from those who refused or from the general population of providers.
Vanderloo 2015	Can't tell	Yes	Can't tell	No	N/A	
Weaver 2002	Can't tell*	Yes	Can't tell	Yes	N/A	Randomised sample, but unsure of the representativeness to broader population. E.g., the authors comment that 'due to slightly higher family income and higher levels of partner education, this sample may reflect providers with adult partners who through educational, financial and supportive community resources are better able to compete in the family child care marketplace.'
Wylie 1996	No	Yes	Can't tell	Yes	N/A	Not of the full country population. The authors note 'Our sample of parents differs from that of the population at large.'
Yamauchi 2011	No*	Yes	No*	Yes	N/A	The authors note 'As a result of attrition and the missing values in the key variables, our analysis has to be based on the sample that is somewhat less representative of children born between April of 2003 and February of 2004.'

Quantitative Studies						
Study	Is the qualitative approach appropriate to answer the research question?	Are the qualitative data collection methods adequate to address the research question?	Are the findings adequately derived from the data?	Is the interpretation of results sufficiently substantiated by data?	Is there coherence between qualitative data sources, collection, analysis and interpretation?	Comments
Ang 2018	Can't tell*	Can't tell**	Can't tell***	Yes	Can't tell****	*No qualitative approach specified **It is unclear how data on children's experiences were gathered *** Thematic analysis is hinted at, but it is unclear how observational data was treated **** Insufficient information
Horgan 2018	Yes	Yes	Can't tell*	No	Can't tell*	*Insufficient data presented
O'Regan 2021	Can't tell*	Yes	Yes	Yes	Yes	*No qualitative approach specified.
Riethmuller 2009	Yes	Yes	Yes	No*	Yes	*This is a subjective point, but reference to primary data is limited. Note also, this paper described data collection to inform resource development, rather than to answer RQs per se.
Wright 2004	Yes*	Yes	Yes**	No***	No	*In that it is a small scale ethnographic study involving two settings, aimed to provide insights into the everyday experiences. **Note, more like a narrative of findings, rather than rigorous results. *** Data not presented, as such, more interpretations, which should be tempered by the small sample size.



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