July 2025 | **Report**

An umbrella review, meta-analysis, and qualitative meta-synthesis

PARENTING INTERVENTIONS FOR PARENTS AND CARERS OF CHILDREN AND YOUNG PEOPLE WITH DISABILITIES

Foundations
What Works Centre for Children & Families

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Acknowledgements

We extend our sincere gratitude to the following members of the parent and carer advisory group for their invaluable contributions to this work. Your lived experiences and thoughtful insights have provided essential guidance, greatly enriching the quality and relevance of this project: Sabbir Ahmed; Caron Aspis; Zoe Beasley; Poli Begum; Susan Burleigh; Joanne Frost; Bracha Hackner; Zobia Kalim; Lindsay Little; Daksha Patel; Renal Patel; Debra Radley; Lara Roth; Hudda Saleh; Alison Vaughan, and Kevin Wright.

We also wish to acknowledge the significant contributions of the research interns from Anna Freud and University College London. Their dedication, hard work, and attention to detail have been instrumental in advancing this work: Qiaoyu Zhou, Cindy Chen, Natalie Musicant, Jodi Lo, Martina Iturriaga, Elina Lilikaki, Ashton Ferguson, Omowumi Obi, Marco (Zhongze) Ren, Ayça Yasa, Stephanie Williams, and Sophia Ramos Montez.

Funding and competing interests

This project was funded by Foundations – What Works Centre for Children & Families.

The work includes contributions from individuals affiliated with Anna Freud and University College London. All aspects of screening, extraction, and synthesis were conducted independently of Foundations to ensure objectivity and impartiality in the findings.

We thank colleagues from Foundations for their support throughout the development of this project.

About Foundations, the national What Works Centre for Children & Families

Foundations, the national What Works Centre for Children & Families, believes all children should have the foundational relationships they need to thrive in life. By researching and evaluating the effectiveness of family support services and interventions, we're generating the actionable evidence needed to improve them, so more vulnerable children can live safely and happily at home with the foundations they need to reach their full potential.

About Anna Freud

Anna Freud is a world-leading mental health charity for children and families. For over 70 years, we have developed and delivered pioneering mental health care. **Our vision is a world where all children and young people are able to achieve their full potential.**

A world in which they and their families get support that is designed with their input, available at the right time, and meets their needs, so that they can develop their emotional and mental health.

Our mission is to close the gap in wellbeing and mental health by advancing, translating, delivering, and sharing the best science and practice with everyone who impacts the lives of children and families. We will achieve this in three ways:

1. **Closing gaps in science.** We will work to understand and tackle the root causes of mental illness, confronting how and why mental health problems emerge in children and young people – and understanding their nature and impact. We will approach gaps in the science as a collaborative project, listening to lived experience and widening public participation in research to help achieve scientific breakthroughs.
2. **Closing gaps in implementation.** We will design, test, and expand new approaches, interventions, and models. We will improve the effectiveness of how help is experienced by children, families, and communities. We will help to transform the systems around them – designing the architecture, making the connections, and improving how all those involved work together to maximise their impact, so that access to help does not depend on social, ethnic, or economic background or geographic location.
3. **Closing gaps in access to knowledge.** We will distil, translate, and disseminate knowledge about what works. We will build tools, provide training, and host peer support networks for parents, carers, professionals, and policy makers – growing the confidence, skills, and understanding of everyone who has an impact on the lives of children and families.

About the Child Attachment and Psychological Therapies Research (ChAPTRe) Unit

The Child Attachment and Psychological Therapies Research (ChAPTRe) Unit is a partnership between Anna Freud and University College London. It is led by Professor Nick Midgley.

The mission of the research unit is to be a space for developing and promoting research related to children's and young people's mental health and emotional wellbeing.

Our particular focus is on evaluating psychological therapies for children and young people, and their parents and carers. We have expertise in research with children and families in various contexts, including with care-experienced young people, families on the edge of care, and young people with depression.

We collaborate with UK clinicians and service providers in various settings, including children's social care, and children's and young people's mental health services. We also work on international collaborations.

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GLOSSARY OF TERMS/ABBREVIATIONS & ACRONYMS

Abbreviation/acronym/ term	Description
ABA	Applied behavioural analysis
ACT	Acceptance and commitment therapy
ADHD	Attention deficit hyperactivity disorder
AMSTAR	A MeaSurement Tool to Assess systematic Reviews (critical appraisal tool for systematic reviews)
ASD	Autism spectrum disorder
BST	Behaviour skills training
CASP	Critical Appraisal Skills Programme (checklist used for critical appraisal of individual qualitative studies)
CBT	Cognitive behavioural therapy
CI	Confidence interval (95%) (the range of values in which we are 95% confident that the true value lies)
CONSORT	Consolidated Standards of Reporting Trials
CP	Cerebral palsy
EMT	Enhanced Milieu Teaching
FASD	Foetal alcohol spectrum disorder
FCEM	Family-Centered Empowerment Model
FCT	Functional communication training

Abbreviation/acronym/ term	Description
GRADE	Grading of Recommendations, Assessment, Development, and Evaluation
GRADE-CERQual	Grading of Recommendations, Assessment, Development, and Evaluation – Confidence in the Evidence from Reviews of Qualitative Research
JBI	Joanna Briggs Institute Qualitative Critical Appraisal criteria
MIT	Modified incidental teaching
Parent-mediated intervention	A programme where parents are trained to implement therapeutic techniques with their child
PEP	Parent Empowerment Program
PICOS	A framework for systematic reviews: Population, Intervention, Comparison, Outcomes, Study design
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PSOC	Parenting Sense of Competence Scale
PSST	Problem-solving skills training
PST	Problem-solving therapy
QED	Quasi-experimental design
RCT	Randomised controlled trial
RIT	Reciprocal imitation training
SCRIBE	Single-Case Reporting Guidelines in BEhavioural Interventions
SEN	Special educational needs
SSTP	Stepping Stones Triple P programme

Abbreviation/acronym/ term	Description
VFI	Video-feedback interventions

A NOTE ON TERMINOLOGY

As authors of this report, we are mindful that there are important considerations in how language is used when talking about disability, and that views about what is acceptable or not acceptable have changed over time. Terms that may have been widely used at one point are now recognised to be pejorative; and there are also individual preferences to be considered. For example, some people may prefer to use ‘person-first language’ (e.g. using phrases such as ‘child with autism’), whereas others may prefer to use ‘identify-first language’ (e.g. ‘autistic child’). In this report, person-first language (e.g. ‘children with a disability’) is generally used throughout, while recognising that there may be different views on this, and this is not the preferred approach for all parents or carers of a child with a disability, in particular for many within the autistic community.

Similarly, while we acknowledge the growing preference for terminology that does not view conditions as ‘disorders’, nearly all of the studies that were reviewed for this report were organised around diagnostic categories, such as autistic spectrum disorder (ASD) and ADHD. So in this review, these diagnostic categories are used, rather than more current terms such as ‘neurodivergent’.

When thinking about language, one particular issue concerned studies (especially those that were conducted some time ago) that are included in this review, but that use language that is no longer considered to be acceptable or appropriate. In consultation with our parent and carer advisory group, in this report, when describing the original studies included, we have retained the terminology used in those original studies (e.g. ‘mental retardation’ rather than ‘intellectual disability’), even in cases where the language may now be considered outdated, pejorative, or non-inclusive. However, in our own writing, we strive to use contemporary, inclusive, and respectful terminology relating to disability, based on both general guidelines and the specific advice of our advisory group.

PLAIN LANGUAGE SUMMARY

Parenting a child or young person with one or more disabilities can be rewarding but also challenging. Getting the right kind of support for families and carers is essential. That's why it is important to understand what types of parenting support exist and what kinds of parenting programmes (or 'interventions') are most helpful, based on the best available research.

Over the years, research studies have increased our understanding of what kind of parenting interventions are most helpful for those caring for children with a wide range of needs – including children with developmental disabilities, autism, chronic health conditions, and other disabilities. However, there has not yet been a single, comprehensive review that brings together all of this evidence on the different parenting interventions available, for carers of children and young people (from birth to 25) with a range of different disabilities, to explore what works, what doesn't, and why.

That is why this report describes a systematic overview, called an 'umbrella review', of the current state of knowledge about parenting interventions for carers of children and young people with a wide range of disabilities. An 'umbrella review' is not a new piece of research but instead offers a careful way to bring together and review what has already been published. It focuses on:

1. What changes have been reported for children, young people, and caregivers after participating in parenting interventions
2. What types of interventions and features appear to work best (or less well)
3. What carers say about their own experiences of these programmes.

We also considered how these interventions may apply to a wide range of families, including those who foster, have adopted, or are kinship or connected carers.

The key findings from this review are as follows:

- Parenting interventions can be effective for improving outcomes for both carers and their children or young people.
- Parenting interventions may be delivered in different ways, by different professionals, and target a wide variety of disabilities – and still be effective. The overall evidence shows that when parenting interventions are tailored to families' needs and implemented well, they can help.
- When comparing those targeting carers of children and those targeting young people, interventions aimed at younger children (especially under the age of 6) tend to show the strongest benefits for child-related outcomes. However, older children and young people (aged 7 to 25) also benefit, just not as much as younger children.
- However, when looking at the carer-related outcomes (such as reduced parenting stress or improved confidence in parenting), interventions aimed at carers of older children and young people are just as effective as those aimed at young children.
- This demonstrates that early support is important, but benefits (especially for carers) can occur at any stage.

- There were differences in how effective interventions were depending on the child's or young person's disability. For example, carers of children and young people with attention deficit hyperactivity disorder (ADHD) generally experienced more positive outcomes than carers of children with autism. This suggests that parenting interventions for those caring for autistic children and young people may need further refinement and adaptation to better meet their specific needs.
- Peer-led parenting programmes (i.e. those that are delivered by people with their own lived experience of caring for a child with a disability) are commonly used and highly valued by caregivers. However, they may need additional support and structure to be as effective as professionally led programmes, particularly for carer-related outcomes.
- The findings indicate that there is no 'one-size-fits-all' approach to parenting interventions for carers of children with disabilities. Services should be flexible and personalised, taking into account the unique needs and preferences of children, young people, and their caregivers.
- Parenting interventions should also consider the wider network and family around the child, young person, and caregivers. Interventions are more likely to succeed when they recognise and engage with these wider systems.
- In the research studies that were brought together for this umbrella review, the studies we looked at often didn't give a lot of information about the cultural, socioeconomic, or ethnic background of the families who took part. That made it difficult to draw conclusions about how well the findings from the research may speak to the needs of the diverse range of children, young people, and families in our communities. However, many of the included studies highlighted the need for parenting interventions to be culturally responsive. More research is needed in this area to ensure support is appropriate for families from diverse backgrounds.

Findings from this review will inform the development of a Practice Guide on parenting interventions for parents and carers of children and young people with disabilities. This will form part of a set of Practice Guides aimed at supporting the implementation of the Children's Social Care National Framework. The National Framework was recommended by the Independent Review of Children's Social Care to establish the purpose, principles, and outcomes of the children's social care system.

This review is intended for a broad audience – including those working in social care, education, and health – as well as policy makers, researchers, and families themselves. Although it doesn't offer direct advice for individual parents or carers, we hope it provides a useful overview of what the evidence says, and where more work is needed.

EXECUTIVE SUMMARY

Introduction

Parenting a child or young person with one or more disabilities can be rewarding but also challenging, so identifying effective support and interventions for caregivers is therefore a priority. But our understanding of what kind of interventions are most effective, and what supports or limits engagement, acceptability, and effectiveness of these programmes, is only partial. Recent systematic reviews on parenting interventions for children and young people with a range of disabilities have expanded our understanding of these interventions. However, to date, there has been no systematic attempt to identify the wide range and types of parenting interventions available, to review their effectiveness for children and young people with a broad range of disabilities, and to provide an understanding of what supports or limits engagement, acceptability, and effectiveness, from caregivers' own perspectives.

In this context, methods such as 'umbrella reviews' (also known as a 'review of reviews', a 'synthesis of reviews', or an 'overview of reviews') are especially useful for bringing together all available evidence on a topic and creating robust and reliable guidance for decision makers in health and social care. Such umbrella reviews provide a general overview, which can be complemented by other approaches, such as meta-analysis or meta-regression, statistical methods that allow us to systematically identify, evaluate, and synthesise results from a range of studies to identify patterns with regard to what works and how. Alongside this, qualitative meta-synthesis (sometimes referred to as 'meta-ethnography' or 'meta-aggregation') is an emerging approach that analyses and synthesises data from multiple qualitative studies and allows us to systematically examine what is known about carers' own experiences of engaging with help.

Therefore, for this report we employed a combination of an umbrella review, meta-analysis, and meta-synthesis to investigate the current evidence base for parenting interventions for caregivers of children and young people with a wide range of disabilities, including severe mental illness. We considered how these interventions may apply to a wide range of families, including those who foster, have adopted, or are kinship or connected carers.

Objectives

1. To conduct an umbrella review that compiles and evaluates studies from existing systematic reviews to establish a broad understanding of the impacts of parenting interventions for caregivers of children and young people (aged 0 to 25) with different kinds of disabilities.
2. To conduct a meta-analysis of RCTs identified in the umbrella review, to quantify the interventions' effects on outcomes across different contexts.
3. To perform meta-regressions to determine which intervention components (e.g. session format, duration, theoretical framework) are statistically associated with positive outcomes.
4. To conduct a meta-synthesis to integrate qualitative findings on the experiences of parents and carers, to provide an understanding of what supports or limits engagement, acceptability, and effectiveness, from the perspective of parents and carers.

Methods

This report presents two separate sections: an umbrella review and meta-analysis, conducted and reported in accordance with PRISMA guidelines, and a meta-synthesis of qualitative findings. The PRO EDI framework was applied across both sections to ensure considerations of equity, diversity, and inclusion were embedded in the design, data extraction, synthesis, and interpretation stages.

The first part of this report sets out to identify previous systematic reviews reporting on quantitative findings on parenting interventions for caregivers of children with disabilities. To address the report's objectives, an umbrella review, meta-analysis, and meta-regressions were conducted following the JBI principles and the Cochrane Handbook for Systematic Reviews of Interventions. The AMSTAR 2 tool was used to appraise the included systematic reviews, and quantitative data was analysed using RStudio. The GRADE tool was then used to assess the certainty of evidence of quantitative findings (i.e. findings from RQ2 and RQ3).

The second part of this report sets out to identify primary studies reporting on qualitative findings on parenting interventions for caregivers of children and young people with disabilities. This stream adopted the meta-aggregation principles established by JBI to extract and appraise qualitative reports. Qualitative findings that fulfilled the selection criteria were analysed with NVivo to generate aggregated findings. Finally, the aggregated qualitative findings were appraised using the GRADE-CERQual tool.

Key findings

- Overall, the report provides evidence for the effectiveness of a range of parenting interventions, both in relation to impact on aspects of parenting, and in terms of impact on children and young people.
- Parenting interventions may be effectively delivered in different formats and settings by different practitioners, for carers of children and young people with a range of different types of disability. The overall evidence shows that when parenting interventions are tailored to families' needs and implemented well, they can be effective.
- Although the quality of evidence was variable, overall there was evidence that a range of parenting interventions can be helpful, and that parenting interventions can be considered as a first line of support for carers of children and young people with a wide range of disabilities.
- More specifically, parenting interventions targeted towards younger children (<6 years) appeared to be the most effective, when looking at the child-related outcomes, such as emotional or behavioural wellbeing. The effectiveness of parenting interventions on child-related outcomes decreases as the child's age increases, especially when looking at outcomes for children and young people aged 13 to 25.
- However, the difference in effectiveness of parenting interventions across age groups was not found with regard to parent-related outcomes, such as parenting stress. This suggests that parents and carers of children of all ages may be helped by parenting interventions, but the direct impact of those interventions on a range of child-related outcomes may decrease as the child gets older, emphasising the importance of early intervention.

- With regard to parent-related outcomes, there was some evidence that carers of autistic children and young people did not benefit from parenting interventions as much as parents of children and young people with attention deficit hyperactivity disorder (ADHD). This suggests that there may be a need to do further work to ensure that parenting interventions for carers of autistic children are clear about their aims and adapted to address the specific needs of this group of caregivers.
- Peer-led interventions, though widely used and often appreciated by carers in terms of engagement and acceptability, may require refinement to improve effectiveness for parent-related outcomes.
- The qualitative findings indicate that there is no ‘one-size-fits-all’ approach regarding parenting interventions for caregivers of children and young people with disabilities. Services should be able to provide a ‘personalised’ approach, which takes into account the specific needs and preferences of children and their caregivers.
- Parenting interventions should be mindful of the wider network around children, young people, and caregivers, because they seem to play a role in the impact of those interventions and are also impacted by them.
- The studies included in the umbrella review generally did not present detailed information on the ethnicity or socioeconomic background of the caregivers who took part in the research evaluations. That made it hard for the review to draw conclusions about whether the evidence for effectiveness of these interventions can be generalised across different parts of the community. However, many of the included studies highlighted the need for parenting interventions to be culturally responsive. More research is needed in this area to ensure support is appropriate for families from diverse backgrounds.

Recommendations and next steps

Findings from this review will inform the development of a Practice Guide on parenting interventions for parents and carers of children and young people with disabilities. This will form part of a set of Practice Guides aimed at supporting the implementation of the Children’s Social Care National Framework. The National Framework was recommended by the Independent Review of Children’s Social Care to establish the purpose, principles, and outcomes of the children’s social care system.

For future research, consistent use of validated outcome measures will facilitate comparability and synthesis of findings across studies. Moreover, long-term follow-ups are essential to evaluate the sustainability of intervention effects and guide future research. With regard to systematic reviews, greater emphasis on examining and consistency in reporting on family dynamics, demographic data (including ethnicity and socioeconomic status), and co-parenting relationships will provide a more holistic understanding of intervention impacts and who is benefiting from them. In particular, inclusion and reporting of underrepresented groups in research is critical to developing equitable and generalisable interventions.

Future research should focus on addressing the high heterogeneity in intervention effectiveness identified in this report. It is important to conduct more focused reviews that examine the specific components of interventions, such as delivery format, length, and content, to better understand which factors contribute to success across different child disabilities. There is a need for further high-quality studies to clarify the impact of specific intervention components. Research should also explore the mechanisms underlying age-related differences in intervention outcomes, particularly why older children may benefit less from their caregivers engaging with a parenting intervention than younger age groups, to design more age-appropriate interventions. Additionally, further high-quality RCTs are needed to compare different intervention formats (e.g. remote vs face to face) and assess their effectiveness in diverse populations. Further research could explore the cost-effectiveness of different intervention models, because this will influence how widely they could be implemented in practice. Lastly, future studies could benefit from reporting results separately for important demographic sub-groups (e.g. by ethnicity), to examine whether there are inequalities in the effectiveness of certain types of interventions across diverse populations.

INTRODUCTION

Parenting interventions for parents and carers of children with disabilities

Those involved with the wellbeing of children and young people are aware of the profound impact that parenting has on children's development and that the quality of parenting plays a key role in supporting their wellbeing (Equality Act, 2010; Public Health England, 2013). As described in the Compendium published by the National Center for Parent, Family, and Community Engagement (2015), parenting interventions have the potential "to promote positive child outcomes by enhancing parents' capacity to provide their young children with the sensitive and responsive care they need for learning and optimal development" (p.2).

Although parenting interventions have been widely evaluated as a method of supporting parents at a universal level, they may have a particular role for the parents and carers of children with disabilities. According to the Equality Act 2010, Section 6, someone is considered to have a disability when their physical or mental health has a "substantial" and "long-term" negative effect on their ability to do normal daily activities. In the UK, the most recent figures from the Department for Work and Pensions estimate that 16 million people had a disability in 2021/22, compared with approximately 11.6 million in 2010/11. Additionally, around 1.5 million children in the UK are considered disabled, equating to about 11% of the child population. Many of these children will be assessed as having 'special educational needs' (SEN) and may be seeking various types of support from their local authorities and social care services.

While research has identified positive impacts of parenting a child with a disability (e.g. Green, 2007; McConnell et al., 2014), there is also a recognition that parenting children with additional needs can be challenging, which may adversely impact both the parent and the child (e.g. Beighton & Wills, 2017; Benson & Kersh, 2011). Identifying effective support and interventions for such parents and carers is therefore a priority, but our understanding of what kinds of interventions are most effective, and what supports or limits engagement, acceptability, and effectiveness of these programmes, from the perspective of parents and carers, is only partial. Recent systematic reviews on parenting interventions for children and young people with developmental disabilities, autism spectrum disorder (ASD), and chronic health conditions, among other disabilities, have expanded our understanding of these interventions (e.g. Deb et al., 2020; Fang et al., 2023; Mitchell et al., 2020). However, to date, there has been no systematic attempt to identify the wide range and types of parenting interventions available, to review their effectiveness for children with a broad range of disabilities, and to provide an understanding of what supports or limits engagement, acceptability, and effectiveness, from the perspective of parents and carers.

The approach to synthesising the evidence

The rapid increase in the number of systematic reviews being conducted in any one field creates challenges, including the need for policymakers and practitioners to spend large amounts of time accessing, reviewing, and making sense of findings, which may be of varying quality and reach contradictory conclusions (Cant et al., 2022; Choi & Kang, 2022). To address this issue, since 2015 there has been an increase in the use of 'umbrella review' (also known as 'review of reviews', 'synthesis of reviews', or 'overview of reviews'), which aims to bring all the evidence on a topic together, creating robust and reliable guidance for decision makers in health and social care.

Given the considerable number of existing systematic reviews on the various types of parenting interventions for children with different types of disability (e.g. Mitchell et al., 2020; Postorino et al., 2017; Ragni et al., 2022; Ruane & Carr, 2019; Tarver et al., 2019; Tellegen & Sanders, 2013), the approach taken in this review involved three stages.

The first stage was to perform a systematic umbrella review that brought together overall evidence on parenting interventions for children and young people (aged 0 to 25) with a range of disabilities. As a second stage, to understand the overall effectiveness of these parenting interventions, we extracted data from the systematic reviews identified through the umbrella review, with a specific focus on randomised controlled trials (RCTs). Using this data, we conducted a meta-analysis to quantify the overall impact of interventions on both child and parenting outcomes, including at long-term follow-up where available. As part of this second stage, we also performed meta-regression to identify which specific intervention components – such as session format, duration, and theoretical framework – are statistically associated with positive outcomes for these populations, using data derived from those RCTs identified in the umbrella review.

While the umbrella review and meta-analysis methodologies are valuable for mapping the interventions offered and assessing their effectiveness, they primarily yield quantitative data. This does not include the perspective of the parents and carers who have engaged in such parenting interventions – a perspective that is essential to inform practice. Therefore, as a third stage, alongside the umbrella review and meta-analysis, we conducted a review of caregivers' experiences of taking part in parenting interventions.

Qualitative meta-synthesis (sometimes referred to as 'meta-ethnography' or 'meta-aggregation'; Sattar et al., 2021) is an emerging approach that analyses and synthesises data from multiple qualitative studies. Previous meta-syntheses on parenting interventions, when delivered at a universal level (i.e. not focused specifically on parents of children with a disability) have contributed to our understanding of the interplay of different dimensions that impact programme engagement and acceptability. These findings included the family context before the intervention, the sense of agency and self-efficacy parents experience during their attendance, the facilitators' characteristics, and the programme's format (Butler et al., 2020; Enright et al., 2020). However, we do not know whether these factors, or others, are found among parents and carers of a child or young person with a disability. Although there are some meta-syntheses focusing on the experience of caregivers of children with one particular type of disability (e.g. Jurek et al., 2023; Walker et al., 2020), this methodology has not been used yet to aggregate the experiences of parents and carers of children with the full range of disabilities, including those caused by severe mental illness in the child or young person.

In combining an umbrella review, meta-analysis, and qualitative meta-synthesis, this project aimed to compile and evaluate evidence related to diverse conditions and age groups that has not been collectively analysed before, assess the impact on parent/carer and child outcomes, examine the intervention components that contribute to effectiveness, and establish learning from studies examining the experience of parents and carers of a child with a disability who have attended parenting interventions.

Parent and carer advisory group

To ensure the output is meaningful to parents and carers who are represented in our review, those with lived experience of caring for a child with a disability were involved at various stages, and in a range of ways, with the development of this report. The research team included a parent co-applicant, who was involved with the development of the initial proposal, and writing the protocol. This co-applicant was involved in the work of the core team throughout the lifetime of the project, alongside a research assistant who also had lived experience of being the parent of a child with a disability and co-led the parent and carer advisory group. This was a panel of parents and carers from diverse backgrounds with lived experience of caring for children with a range of disabilities.

Setting up a parent and carer advisory group was a central component of the umbrella review to ensure that decision making around various aspects of the review was influenced by the lived experience of parents and carers of children with disabilities. Anna Freud's participation framework is based around the Lundy model (Lundy, 2007). We used the four domains of this framework (space, voice, audience, and influence) to 1) create safe and inclusive opportunities for parents and carers to express their views, 2) allow them to express their views in a way that works for them, 3) ensure that the views expressed were fed back to the research team, who used them to influence their decision making, and 4) make sure that the views expressed were acted on as appropriate.

It was important that we captured a cross section of views to ensure that our advisory group reflected the diversity of parents and carers in the UK who are caring for children with a range of disabilities. We used a variety of methods to advertise the group and share further information, to be as inclusive and representative as possible. A leaflet was created about the project (see Appendix A1 'Advisory group recruitment leaflet'), which highlighted the importance of lived experience, influencing research, and the benefits of taking part. Although some participants were recruited via existing networks and contacts, Anna Freud information channels including social media, and community groups, efforts were also made to recruit parents and carers from underrepresented groups such as those with children with profound and multiple learning disability (PMLD) and those from minoritised ethnic backgrounds. To recognise the value and the contribution of participants, they were given a £20 gift voucher of their choice for each meeting attended.

A total of 16 parents and carers signed up to the group. We had a wide representation across both disability of the children being cared for (including neurodivergence, chromosome abnormality, mental health conditions, chronic health conditions such as type one diabetes, and physical disability such as epilepsy) and type of carer (including birth parent, kinship carer, foster carer, and professional carer). Many of our advisory group were caregivers to a child or children with comorbidities and many of our professional carers also had personal caregiving roles, which allowed for greater representation. Seven meetings were held over the course of the project, and a final meeting to present the final report to participants and allow them to reflect on their experience and say goodbye.

During these meetings, these parents and carers used their own lived experience of caring for children with disabilities to provide input to the core team at different stages (i.e. the definition of conditions/search terms to be included, data extraction, data analysis, and reporting). The parent co-applicants helped to ensure the input of the advisory group was adequately reflected in the ongoing work of the research team. The overall aim was to ensure that the review speaks to the needs of parents and carers who may be eligible for early help and/or children's social care services, as well as to those who commission or deliver such services.

Table 1 sets out the topics covered at advisory group meetings, which were each attended by 7 to 10 participants. We varied the times and days we held the meetings to make them as accessible as possible. All meetings were recorded with consent from participants. Due to the sensitive nature of some topics, we placed a strong emphasis on creating and maintaining a safe environment for all and we invited anyone who wanted to stay at the end of the meeting for a debrief to do so.

Table 1. Advisory group meetings and topics discussed

Advisory group meeting	Content
Meeting 1 7 May 2024	• Getting to know each other, overview of the project and role of group • Discussion on terminology around disability
Meeting 2 4 June 2024	• Overview of an umbrella review • Which research studies should we consider under the heading 'children with disabilities'?
Meeting 3 5 June 2024	• Overview of an umbrella review • Which research studies should we consider under the heading 'parenting intervention'?
Meeting 4 12 July 2024	• Ambiguous papers from the umbrella review for further discussion (include or exclude from study)

Advisory group meeting	Content
Meeting 5 16 September 2024	Overview of a meta-synthesis Experiences of parenting interventions – what makes carers keep going (or not) to the sessions or carry on (or not) with the activities that are taught to them?
Meeting 6 5 December 2024	Overview of a meta-synthesis Reflections on findings related to barriers to parenting interventions
Meeting 7 4 February 2025	Development of practice implications
Meeting 8 25 March 2025	Presentation of final report, reflections, and goodbye

Impact and feedback cycle

We made it clear to participants that their views would be considered alongside the observations of the research team and the feedback from Foundations and that they would be kept updated on how their views shaped the review and be given reasons why (or why not) the research team incorporated their suggestions. This was particularly relevant when determining the scope of the definitions of ‘parenting intervention’ and ‘disability’, because too wide a definition would make the research unmanageable and the conclusions too broad, whereas too narrow a definition could mean important findings were missed. At the same time, practical considerations about what was possible within the context of an umbrella review had to be considered.

The advisory group provided valuable and informative inputs on the definitions of child disability and parenting interventions, which significantly shaped the project’s direction and scope.

The group strongly supported adopting a broad definition of parenting interventions to ensure inclusivity. They recommended encompassing interventions delivered by professionals and those mediated by parents, reflecting the diverse ways in which parenting support can be structured. Additionally, the group emphasised the importance of including caregivers beyond biological parents, such as uncles, aunts, grandparents, and kinship carers, if the intervention directly enhanced their parenting roles. They also highlighted the need to exclude interventions addressing general family dynamics, such as family therapy, unless they specifically targeted parenting skills, attitudes, or behaviours. This approach helped refine the project’s focus on parenting-specific interventions.

The group endorsed the definition of disability outlined in the Equality Act 2010, noting its flexibility in recognising that a condition can affect children differently. Although the ideal would be to assess each child and family individually, to assess whether the impact on their lives should be considered significant and enduring, the advisory group recognised that most research studies were designed around specific diagnostic categories, such as 'children with ASD'. In light of this, they provided critical guidance on the scope of included conditions, which led to a final decision to exclude studies focused specifically on parenting interventions for children with mental health conditions such as anxiety and depression (even though in some cases the impact of these could be severe and enduring), while including those studies focused on parenting interventions for caregivers of children and young people with psychosis, schizophrenia, or bipolar disorder. Furthermore, the group stressed the importance of including studies of parenting interventions for caregivers of neurodiverse children, such as those with ASD and ADHD, without a formal diagnosis, given how many children and families may face long delays in receiving a formal diagnosis. This approach ensured that the review remained both inclusive and comprehensive, capturing the full range of experiences faced by children with disabilities and their families.

Once the views of the advisory group had been shared with the wider research team and Foundations, the ways that this would impact the ongoing work of the review were fed back to the participants at the next advisory group meeting, as well as through email communication. Feedback from the group on their experience of participation was highly positive (see Appendix A2 'Participants' experiences of the advisory group'). It was clear that parents and carers felt that their voices had been heard. They also perceived that they had made a meaningful contribution to important research, which they found very rewarding.

While we recognise that stakeholder engagement can enhance the relevance of our research, we clarify that the parent and carer advisory group did not participate directly in the study search, selection, appraisal, or synthesis processes. This approach ensured that the comprehensive review of evidence driving our narrative synthesis and subsequent analyses remained independent and methodologically rigorous, while still incorporating valuable stakeholder perspectives on outcome prioritisation.

A note on terminology

As authors of this report, we are mindful that there are important considerations in how language is used when talking about disability, and that views about what is acceptable or not acceptable have changed over time. Terms that may have been widely used at one point are now recognised to be pejorative; and there are also individual preferences to be considered. For example, some people may prefer to use 'person-first language' (e.g. using phrases such as 'child with autism'), whereas others may prefer to use 'identify-first language' (e.g. 'autistic child'). In this report, person-first language (e.g. 'children with a disability') is used throughout, while recognising that there may be different views on this among key stakeholders, and this is not the preferred approach for all parents or carers of a child with a disability, in particular for many within the autistic community.

The issues about terminology, as well as definitions of 'disability', were widely discussed with the parent and carer advisory group. One particular issue concerned studies (especially those that were conducted some time ago) that were identified in our review, but which used language that is no longer considered to be acceptable or appropriate. In consultation with the advisory group, in this report, when describing the original systematic reviews and empirical studies included, we have retained the terminology used in the original studies (e.g. 'mental retardation' rather than 'intellectual disability'), even in cases where the language may now be considered outdated, pejorative, or non-inclusive. However, in our own writing, we strive to use contemporary, inclusive, and respectful terminology relating to disability, which aligns with current understanding, based both on general guidelines and on the specific advice of our advisory group.

Across this report, there will also be some variation in how different types of parenting intervention are described. Many specific parenting interventions were reported on in the studies reviewed in this report, and in some cases similar interventions were described with different names, or the same names may have been used to describe different parenting interventions. When grouping individual programmes into 'types' of parenting interventions, based only on the information provided, it was not always clear whether, for example, a particular intervention being referred to should be considered e.g. a 'behavioural' or a 'cognitive behavioural' intervention. It was not possible to develop a single set of terms to describe the categories of parenting intervention, and to provide clear definitions and use this consistency across the whole of this report. The findings from each of the different sections of this report are based on a review of different studies, and so the terms used to describe the types of parenting interventions vary somewhat across the different sections of this report. Once again, where possible we have tried to stay close to the terminology used in the original studies, wherever possible.

Objectives

Research aims

1. To synthesise existing systematic reviews, by means of an umbrella review, providing a consolidated understanding of parenting interventions' effectiveness for parents/carers and children and young people with disabilities, including those caused by severe mental illnesses.
2. To assess the impact of these parenting interventions on child and parenting outcomes across different contexts, drawing on data from RCTs identified in the umbrella review.
3. To identify specific components and practice elements within parenting interventions associated with effective outcomes for these populations, drawing on data from the RCTs identified in the umbrella review.
4. To explore the experiences of parents and carers of a child or young person with a disability, who have engaged in parenting interventions, to provide an understanding of what supports or limits engagement, acceptability, and effectiveness.

Research objectives

1. To conduct an umbrella review that compiles and evaluates studies from existing systematic reviews to establish a broad understanding of the impacts of parenting interventions for caregivers of children and young people (aged 0 to 25) with different kinds of disabilities.
2. To conduct a meta-analysis of RCTs identified in the umbrella review, to quantify the interventions' effects on targeted outcomes across different contexts.

3. To perform meta-regressions to determine which intervention components (e.g. session format, duration, theoretical framework) are statistically associated with positive outcomes.
4. To conduct a meta-synthesis to integrate qualitative findings on the experiences of parents and carers, to provide an understanding of what supports or limits engagement, acceptability, and effectiveness, from the perspective of parents and carers.

Findings from this review will inform the development of a Practice Guide on parenting interventions for parents and carers of children and young people with disabilities, including those caused by severe mental illnesses. This will form part of a set of Practice Guides aimed at supporting the implementation of the Children's Social Care National Framework. The National Framework was recommended by the Independent Review of Children's Social Care to establish the purpose, principles, and outcomes of the children's social care system.

Research questions

RQ1. Consolidating evidence on parenting interventions

What is the overall strength and consistency of evidence from systematic reviews on the effectiveness of parenting interventions for parents and carers of children and young people with a range of disabilities, including those caused by severe mental illnesses, and what are the common outcomes used to assess their impact?

RQ2. Effectiveness of parenting interventions

a. What is the effectiveness of parenting interventions in improving outcomes for parents/carers and children and young people with a range of disabilities, including those caused by severe mental illness?
b. How do outcomes of parenting interventions vary across different types of disabilities and different age groups (0 to 5, 6 to 12, 13 to 25) among children and young people?

RQ3. Components of effective interventions

a. What components of parenting interventions are statistically associated with greater effectiveness?
b. How do specific components of parenting interventions contribute to positive outcomes for children and young people with disabilities and their parents?

RQ4. Enablers and barriers to engagement, acceptability, and effectiveness for engagement and acceptability

What are the key features that are seen to support or limit engagement, acceptability, and effectiveness, from the perspective of parents and carers?

Methods

While the current project encompasses a unified investigation, the scope of the different research questions entails different methodological steps. Below, we first present the steps for the umbrella review and meta-analyses and meta-regressions, addressing RQs 1 to 3 (Stream 1); and we then present the steps for the meta-synthesis, focusing on RQ4 (Stream 2).

Protocol registration and ethical review

The protocol for this report was prospectively registered at PROSPERO (CRD42024552042) and the Open Science Framework,[1] and published on Foundations' website.[2]

The published protocols present the unified plans for the umbrella review and meta-analyses and meta-regressions, addressing RQs 1 to 3 (Stream 1) and the meta-synthesis, focusing on RQ4 (Stream 2). To ensure the integrity and quality of the report, both streams followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Page et al., 2021) guidelines. Furthermore, we used the PRO EDI framework to guide data extraction and synthesis across both the umbrella review/meta-analysis and the meta-synthesis, integrating considerations of equity, diversity, and inclusion throughout. This instrument helped us to make judgements about whether the review findings apply equally to all those who could benefit from the interventions being reviewed.[3]

Stream 1: An umbrella review, meta-analysis, and meta-regressions

Eligibility criteria

Inclusion criteria for RQ1, RQ2, and RQ3

P (Population): Parents and carers of children and young people (aged 0 to 25) with a range of disabilities, including those caused by severe mental illness.

I (Intervention): Parenting interventions. For the purpose of this review, 'parenting intervention' is defined as a structured set of activities or services, with established eligibility requirements, aimed at enhancing how parents and caregivers approach and fulfil their roles, specifically in terms of parenting knowledge, attitudes, skills, behaviours, and practices (based on World Health Organization (WHO), 2022). These interventions are designed to be preventative or treatment-oriented, targeting parents and other caregivers to modify their parenting knowledge, skills, attitudes, or behaviour. The content of parenting interventions may be delivered through various learning activities, either in group settings or individual parent/family-based sessions, with or without the involvement of children, and may be administered by professional or

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[1] See: https://osf.io/d7m2z

[2] See: https://foundations.org.uk/our-work/current-projects/parenting-interventions-for-parents-and-caregivers-of-children-and-young-people-with-disabilities

[3] See: https://www.trialforge.org/trial-diversity/pro-edi-improving-how-equity-diversity-and-inclusion-is-handled-in-evidence-synthesis

paraprofessional staff in various settings such as the home, a centre, or online (Backhaus et al., 2023).

C (Comparison): No treatment,[4] waiting list, minimal intervention, and service as usual.

O (Outcomes): A range of outcomes related to the development and wellbeing of the child or young person, as well as those outcomes related to impact on parenting. As the umbrella review includes a broad range of interventions covering a large age span (children aged 0 to 25), we did not predetermine which specific outcomes to include. Rather, we reviewed the range of outcomes included in identified studies and then worked with our parent and carer advisory group to determine which of these should be reported on and/or included in the meta-analyses and meta-regressions. Outcomes were expected to include variables such as child emotional wellbeing, internalising and externalising problems, educational attainment, social skills, quality of parenting, parenting skills, and parent health and wellbeing, including parenting stress.

The umbrella review included systematic reviews and/or meta-analyses published in peer-reviewed journals in English from 1990 onwards. Specifically, in line with the 'Cochrane handbook for systematic reviews of interventions' (Higgins & Green, 2008), we defined a systematic review as one that attempts to collate all empirical evidence fitting prespecified eligibility criteria to address a specific research question, employing explicit, systematic methods to minimise bias and provide reliable conclusions. Accordingly, the systematic reviews had to feature clearly stated objectives with predefined eligibility criteria, an explicit and reproducible methodology, and a systematic search strategy designed to identify all relevant studies. Moreover, each systematic review was required to assess the validity of the included studies – often through risk of bias evaluations – and to present a systematic synthesis of the characteristics and findings of those studies.

To ensure transferability to the UK context, this review only included studies conducted in high-income countries with comparable child welfare systems to the United Kingdom's, including: the four nations of the United Kingdom (England, Wales, Scotland, Northern Ireland), the United States of America, Canada, Australia, New Zealand, and European countries (including the Republic of Ireland, France, Germany, Sweden, Finland, Norway, Denmark, and the Netherlands). Systematic reviews focused exclusively on low- and middle-income countries were excluded from the umbrella review. Studies that did not report the country of origin were included in the umbrella review, provided they met the remaining inclusion criteria. Some systematic reviews included individual studies that were conducted in low- or middle-income countries; these studies were included in the umbrella review, which evaluated each systematic review in its entirety. However, when selecting individual studies for inclusion in the subsequent meta-analyses and meta-regressions, those individual studies conducted in low- and middle-income countries were excluded.

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[4] To further clarify, 'No treatment' refers to the use of a no-treatment or usual care control group in the RCTs. In this context, the absence of an active comparator does not imply that the RCTs were conducted without any control; rather, it indicates that studies where the control arm received no active intervention (as opposed to an alternative treatment or placebo) were eligible for inclusion. This design enables a clear assessment of the intervention's effect by comparing outcomes in the treatment group with those in a baseline condition where no treatment is provided.

Search strategy

The search strategy outlined below was tailored to capture systematic reviews of the broad spectrum of parenting interventions for children and young people with disabilities. They were used in searches carried out via Embase, MEDLINE, PsycInfo, the Cochrane library, PubMed, and the Campbell Collaboration Library including studies published in English from 1990 onwards. All entries were organised and managed through EndNote and Covidence,[5] with duplicates being removed during the screening process.

1. (ADHD or “ADD” or “allergic rhinitis” or allergy or anemia or anxiety or arthritis or ASD or “Asperger syndrome” or asthma or autis* or asperger* or bipolar or blind* or bronchitis or cardiac or cardiovascular or “cerebral palsy” or chronic or compuls* or “cystic fibrosis” or deafness or delay* or depression or “depressive disorder” or dermatitis or “developmental coordination disorder” or “developmental disab*” or diabetes or difficult* or disabilit* or “down syndrome” or “down’s syndrome” or “downs syndrome” or dyscalculia or dyslexia or dyspraxia or eczema or epilepsy or fibromyalgia or “hay fever” or hypermobility or “hearing loss” or heart or hyperactivity or “intellectual disab*” or kidney or “language disorder*” or “language pathology” or “language impairment” or “learning disab*” or “loss of hearing” or “low vision” or mania or manic or metabolic or migraine or “minimal brain dysfunction” or “minor neurological dysfunction” or “motor coordination difficulties” or “motor coordination problems” or “motor delay disorder” or “motor learning difficulties” or “motor dysfunction” or “motor problems” or “motor skills disorder*” or “multiple sclerosis” or “muscular dystrophy” or “non-verbal learning dysfunction” or “perceptual-motor impairment” or OCD or obsess* or “otitis media” or paranoid or “pervasive developmental disorder” or phenylketonuria or Psychosis or Psychotic or renal or “selective mutism” or “special needs” or “spina bifida” or schizo-affective or schizoaffective or schizophrenia or seizure or “sensorimotor difficulties” or “sensory integrative dysfunction” or “sickle cell” or thalassemia or thyroid* or “trisomy 21” or Tourette* or “visual impairment” or “visually impaired” or “visual loss”)

AND

2. (adoptive OR caregiver* OR carer* OR caretaker* OR couple* OR famil* OR father* OR foster OR guardian* OR kinship OR maternal OR mother* OR parent* OR paternal)

AND

3. (parent* or famil*) adj4 (program* or intervention* or train* or education or group or therap*)

AND

4. (“systematic review” OR review OR “meta-analysis” OR “meta-analytic review” OR “systematic literature review” OR “comprehensive review” OR “integrative review” OR “evidence synthesis” OR

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[5] See: https://www.covidence.org

“Cochrane review” OR “evidence-based review” OR “systematic search and review” OR “quantitative synthesis”).

Proximity operators were adapted according to the syntax supported by each database, so for example ‘adj4’ could be substituted by ‘W/4’, ‘NEAR4’, ‘~4’. For platforms where truncation is not supported alongside proximity operators, the following string was used in domain number 3, for example: “Parenting program” [title/abstract:~4] OR “Parenting intervention” [title/abstract:~4] OR “Parenting training” [title/abstract:~4] OR “Parent training” [title/abstract:~4] OR “Parent group” [title/abstract:~4] OR “Parent therapy” [title/abstract:~4] OR “Family program” [title/abstract:~4] OR “Family intervention” [title/abstract:~4] OR “Family training” [title/abstract:~4] OR “Family group” [title/abstract:~4] OR “Family therapy” [title/abstract:~4].

Screening procedure

For the screening of titles and abstracts for the umbrella review, each record was initially reviewed by one reviewer. A second reviewer addressed queries for studies deemed ‘maybe’ eligible, and studies progressed to full-text review in cases of uncertainty. To ensure consistency, an initial batch of 50 papers was double screened to refine and clarify the inclusion and exclusion criteria; we successfully aimed to meet 85% internal reliability across these 50 papers. Following this, all texts deemed potentially suitable underwent a full-text review for final inclusion. This step involved a double review by two separate reviewers to guarantee thoroughness and accuracy in the selection process.

Data extraction

For the umbrella review, we used the standardised JBI data extraction tool by Aromataris et al. (2024) to extract data from systematic reviews and meta-analyses to address RQ1.

We extracted the following information from each systematic review and meta-analysis, using the JBI data extraction tool (Aromataris et al., 2024) as a guide:

1. Citation details
2. Objectives of the included review
3. Type of review
4. Participant details
5. Setting and context
6. Number of databases sourced and searched
7. The date range of database searching
8. Publication date range of studies included in the review that inform each outcome of interest
9. Number of studies, types of studies, and country of origin of studies included in each review
10. The instrument used to appraise the primary studies and the rating of their quality
11. Outcomes reported that are relevant to the umbrella review question
12. Method of synthesis/analysis employed to synthesise the evidence
13. Comments or notes the umbrella review authors may have regarding any included study.

Subsequently, to conduct the meta-analysis and meta-regressions that address RQ2 and RQ3, the team extracted data on individual RCTs from the systematic reviews and meta-analyses included in the umbrella review. This process involved a meticulous data extraction phase from the umbrella review to identify and evaluate the RCTs, ensuring a comprehensive analysis relevant to the research questions. To avoid duplication, data extraction was guided by recording each systematic review's authors, publication year, and unique digital object identifier (DOI); any RCT with a DOI already present in the dataset was omitted from subsequent extractions. The aim was to construct as complete a dataset as possible from the umbrella review concerning the RCTs, thereby avoiding the need to individually access each RCT for data extraction, which was beyond the scope of this review.

The selection criteria were applied at the level of systematic reviews rather than at the level of individual primary studies. We included only systematic reviews that met prespecified methodological standards, such as clearly defined objectives, transparent and reproducible methods, comprehensive search strategies, and rigorous assessment of study validity (e.g. risk of bias evaluations). Once a systematic review met these inclusion criteria, data was extracted on the individual RCTs it contained. This approach ensured that our dataset was derived exclusively from high-quality systematic reviews while avoiding the redundancy of reapplying the selection criteria to each primary study.

Any systematic review that met the predefined inclusion and exclusion criteria was incorporated into the umbrella review, where we conducted a narrative synthesis of the findings. While these systematic reviews might include a range of study designs, only RCTs were extracted for the subsequent meta-analysis and meta-regression focused on intervention effectiveness. This two-step approach ensured that our analysis focused specifically on high-quality RCTs from the most relevant systematic reviews.

For the meta-analysis and meta-regressions, the following details, where available, were extracted regarding all RCTs from each systematic review included in the umbrella review:

Publication information:

- Title
- Author(s)
- Year of publication.

Methodology:

- Study setting (location and community characteristics)
- Sample size (by group, at baseline, post-intervention, and follow-up)
- Inclusion/exclusion criteria
- Randomisation procedure
- Blinding (specify type: e.g. single, double)
- Risk of bias assessment.

Baseline participant demographics:

- Children's characteristics (age, gender, ethnicity, nature of disability, etc.)
- Caregiver's characteristics (age, gender, ethnicity, marital and socioeconomic status, etc.).

Intervention data:

- Description of intervention (name, content, etc.)
- Duration of intervention
- Number and frequency of sessions
- Delivery mode and format
- Type of practitioner delivering intervention, including training requirements
- Theoretical framework
- Cultural adaptations of the intervention for specific populations
- Fidelity assessment.

Comparator/control group:

- Description of control.

Outcome data:

- Primary outcomes measured
- Secondary outcomes measured
- Mean and standard deviation in each arm at baseline, post-intervention, and follow-up
- Effect size (e.g. mean difference, standardised mean difference, or Cohen's d) and confidence intervals for primary and secondary outcomes.

Quality and appraisal of bias

For the umbrella review, we conducted quality and bias appraisal of each systematic review using the AMSTAR 2, a critical appraisal tool designed for systematic reviews that include randomised and non-randomised studies, or both (Shea et al., 2017). The tool assesses the reviews across several domains such as study selection, data extraction, risk of bias, and the adequacy of literature searches. It includes 16 items to provide a detailed and rigorous assessment of systematic reviews that involve diverse study designs and complex evidence bases. It guides users through a series of questions (yes/partial yes/no) that results in an overall rating of high, moderate, low, or critically low quality.

Data coding

Outcomes for meta-analysis and meta-regression

For relevant studies identified in the umbrella review, data was extracted for a variety of child- and parent-related outcomes.

Given the significant variation in intervention types, age range, and types of disability examined in this report, there was inevitably a very wide range of outcome domains reported across studies. Once all outcome domains were identified, the child-related outcomes were classified into six broad domains: behavioural, disability-specific, language and communication, child development and cognitive skills, social skills and interaction, emotional and psychological, health and physical, and 'other' outcomes. For information about the specific types of outcomes included in each of these domains, see Table 2. Multiple child-related outcomes could be extracted from one study.

However, for sub-group analyses and meta-regression, we only included one type of child-related outcome for each study – the outcome that was selected as the primary child-related outcome in the systematic review associated with the study.

Table 2. Child outcome domains

Type of child outcome	Specific outcome domains
Behavioural	• Child behaviour • Externalising behaviours • Disruptive behaviour • Behavioural problems • Hyperactive/impulsive, inattention • Maladaptive behaviour • Externalising problems • Hyperactivity, inattention, restlessness • Inattention • Attention on task • Conduct problems • Opposition • Defiance/aggression • Externalising problems • Noncompliance • Disciplinary incidents • Aggression • General behaviour
Disability-specific outcomes	• ADHD • ADHD symptoms • ADHD-related behaviour • Child symptoms • Autism core symptoms • ASD severity • ASD symptoms • Oppositional defiant disorder (ODD)
Language and communication	• Child expressive language • Child expressive vocabulary • Child language • Child receptive language • Child receptive vocabulary • Communication behaviour • Adaptative functioning (language) • Stuttering frequency • Language development • Communication skills • Vocabulary diversity • Speech efficacy • Linguistic abilities • Lexical density

Type of child outcome	Specific outcome domains
Child development and cognitive skills	Executive functioning Motor development Cognitive skills Adaptative functioning Problem solving Cognition
Social skills and interaction	Social functioning Social communication Communication behaviour Adaptative functioning (social skills) Socialisation Child initiation Social skills Behaviours in parent–child interactions Social responsiveness
Emotional and psychological	Child mental health Mental health problems Mood Internalising problems Emotional problems Infant affect Emotion recognition
Health and physical outcomes	Child health Concussion symptom change score
Other/cannot be classified	None N/A Goal attainment

In a similar way, parent-related outcomes were classified into five domains: parenting practices, parent–child and family interaction, parental stress, parental wellbeing, parental knowledge, parenting efficacy, and 'other' outcomes. For information about the specific types of outcomes included in each of these domains, see Table 3. Multiple parent-related outcomes could be extracted from the same study. However, for sub-group analyses and meta-regression, we only included one type of parent-related outcome for each study – the outcome that was selected as the primary parent-related outcome in the systematic review associated with the study.

Table 3. Parent/carer outcome domains

Type of outcome (parent/carer)	Specific outcome domains
Parenting practices	• Positive parenting • Parent behaviour • Parenting attitudes • Parenting style • Commands quality • Caregiving mastery • Praise • Positive caregiving behaviours • Negative parenting • Parental directiveness • Negative parenting (not specified) • Parenting laxness, verbosity, and over reactivity • Negative/ineffective discipline • Negative caregiving behaviours • Parenting style • Adaptive behaviour
Parent–child and family interaction	• Behaviours in parent–child interactions • Parental responsiveness • Responsive interaction • Family adaptability and cohesion • Parent–child interactions • Family functioning • Parent–child interaction • Positive affect • Stress – parent to child • Infant attentiveness • Dyadic parent–child interaction • Observation – warmth • Parent–child conflict • Parent–child relationship • Conflict behaviour • Relationship quality
Parental stress	• Parental stress • Psychological distress
Parental wellbeing	• Parent mental health • Parental self-esteem • Resilience • Parental wellbeing • Psychological acceptance • Parental satisfaction • Role limitations due to emotion problems • Anxiety, depression • Negative affect • Gratitude

Type of outcome (parent/carer)	Specific outcome domains
Parental knowledge	• Parental knowledge
Parenting efficacy	• Self-efficacy • Parental problem-solving skills • Confidence in managing child • Coping skills • Parenting efficacy • Sense of competence • Confidence using int. strategies • Coping skills • Cognitive adaptation • Parent concern • Parent confidence • Skill navigating medical services • Confidence – behaviour
Other/cannot be classified	• None • N/A • Perceived social support • Contracting, privileges • Impairement (parent)

Demographics used in meta-regression

Six categories of disability provided data for meta-analysis. These categories were based on a review of which types of disability were included in most individual studies identified within the systematic reviews (or where few studies were identified, disabilities could be meaningfully grouped together): ASD, ADHD, brain injury, developmental delay, diabetes, speech and language impairment. All other disabilities that did not fit within these six categories were included in a separate group labelled “other” (e.g. cancer, asthma). The categories used here are slightly different from those used in the umbrella review, because in the meta-analysis the groupings were shaped by the number of individual RCTs that provided data to be analysed. For example, diabetes was just one of a number of chronic health conditions reported in the umbrella review, so was reported within the broader grouping of ‘chronic health conditions’; but because there was a significant amount of data reported from individual RCTs of parenting interventions for children with diabetes (and not of other types of chronic health condition), in the meta-analysis this was treated as a separate category. For meta-regression, the ASD group was used as the reference category because the largest number of studies examined this disability type.

Average age of participants in the study was categorised into three groups: <6 years; 6 to 12 years; and 13 to 25 years. Gender ratio was extracted from the studies, reflected as the proportion of children who were boys (e.g. a gender ratio of 0.75 reflects that 75% of participants are boys). No data was reported on children who had other gender identities (e.g. non-binary). Ethnicity of participants was rarely reported in reviews. This meant ethnicity could not be included in the meta-regression. Reviews did not report results stratified by ethnicity or gender.

Intervention components used in meta-regression

Four components of parenting interventions (based on what information was identified during data extraction from the relevant systematic reviews) were examined in meta-regression: type of parenting intervention, setting in which it was delivered, delivery format, and who it was provided by (deliverer). Type of parenting intervention included six, not mutually exclusive, categories, derived from a review of the information about interventions provided within the systematic reviews: behavioural, communication-based, cognitive-behavioural, problem-solving, family-systemic, and mindfulness-based.

Setting was coded into two groups: face-to-face/mixed and remote only. Format was coded into two groups: individual- and group-based. The "individual" group included interventions for multiple people in the same family. Deliverer included three, not mutually exclusive, categories: professional, researcher/student, and peer-led (parent/carer).

Data analysis

To address RQ1, the data from systematic reviews was synthesised using an umbrella review methodology (Aromataris et al., 2024). This approach involves systematically collecting and synthesising evidence from existing systematic reviews to provide a comprehensive understanding of parenting interventions' effectiveness for parents and carers of children and young people with disabilities. By aggregating findings from multiple reviews, we aimed to generate a consolidated overview of the collective evidence on the effectiveness of parenting interventions across various disabilities and target populations.

The data synthesis in the umbrella review involved several steps. First, we aggregated the outcomes reported in systematic reviews to understand the overall effectiveness of parenting interventions for a diverse set of disabilities. Second, we identified the most frequently used outcome domains across these systematic reviews to evaluate the success of parenting interventions. Third, we analysed the consistency and variability of reported benefits across different types of parenting interventions and the target populations they serve. Additionally, we synthesised the theoretical underpinnings and frameworks of the parenting interventions to understand their intended mechanisms of action and influence on outcomes.

To address RQ2a, we conducted a combined meta-analysis across all RCT studies identified in the umbrella review, using a method that gives more importance to studies with more precise estimates (known as inverse-variance weighting), looking at each outcome one by one. This helped us figure out whether, on average, parenting interventions were beneficial for the participants studied. We also reported I^2, a statistic that quantifies the proportion of total variability in effect estimates that is due to between-study heterogeneity rather than random sampling error. Higher I^2 values indicate greater heterogeneity, meaning that study results vary more than would be expected by chance alone. Given the anticipated high heterogeneity, we employed random-effects models using restricted maximum likelihood (REML) to provide more robust estimates of intervention effects. To enhance interpretability, we reported the pooled standardised mean difference (SMD) along with 95% confidence intervals (CIs) to indicate the precision of the estimated average effect, and 95% prediction intervals (PIs) to reflect the expected range of effects in future studies. Prediction intervals account for heterogeneity, allowing us to assess not just whether parenting interventions are effective on average, but also the extent to which effectiveness may vary across different interventions and contexts.

To address RQ2b/RQ3a/RQ3b, meta-regression was used to examine potential moderators that might explain the heterogeneity in the effectiveness of parenting interventions across studies. These moderators included demographic characteristics about 1) the children being studied (age, gender ratio, disability) or 2) components of the intervention being delivered (type, setting, format, deliverer). Meta-regression was initially performed separately for each moderator in a univariable model (i.e. sub-group analysis; Model 1), but then also after adjusting for other moderators in a multivariable model (Model 2). If the number of studies being meta-analysed was small, the multivariable meta-regression model only included moderators that were most strongly associated with the outcome in univariable models, to avoid overfitting (Model 3).

Additionally, for RQ2b and RQ3, we were keen to explore how various elements of parenting interventions impact children and young people with disabilities and their families across diverse ethnic, social, and economic backgrounds and age groups, contingent on the reported data within the systematic reviews identified. Our search strategy was sufficiently inclusive to encompass all pertinent reviews, including those specifically addressing inequalities, and where data permitted, we aimed to address these specific queries. However, we did not identify data reporting results stratified by ethnicity, so potential inequalities could not be explored.

We then performed analyses to examine the potential for bias in our review. We performed a sensitivity analysis where we excluded studies that are judged to be at high risk of bias (Higgins et al., 2011). Moreover, small-study effects, which can suggest but do not definitively indicate publication bias, were examined by assessing the asymmetry of a funnel plot, where intervention effect estimates were plotted against their standard errors (Deeks et al., 2019). Additionally, Egger's test (Egger et al., 1997) was used to statistically assess the presence of asymmetry, which may be indicative of small-study effects and potential publication bias.

All quantitative data analyses were conducted using the meta, metafor, and car packages in RStudio (R Core Team, 2021), following best practices covered in the 'Cochrane handbook for systematic reviews of interventions' (Higgins et al., 2022).

To assess the certainty of evidence for meta-analysis and meta-regression results we used the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) approach (Guyatt, et al., 2008). This approach allowed us to make conclusions about the overall effectiveness of interventions (RQ2) and the intervention components associated with effectiveness (RQ3). Conclusions were categorised into four levels: "very low certainty", "low certainty", "moderate certainty", and "high certainty". The GRADE process begins with evidence rated as "high certainty" and then applies deductions based on five criteria: risk of bias, inconsistency of results, indirectness of evidence, imprecision of estimates, and publication bias. For the imprecision criterion, we reduced the certainty by one level for non-significant results where the confidence intervals included small effects (SMD 0.1 to 0.2), by two levels if they included moderate effects (SMD 0.2 to 0.5), and by three levels if they included large effects (SMD >0.5).

Stream 2: Meta-synthesis of qualitative studies

To address RQ4, we conducted a separate systematic review also following the PRISMA guidelines (Page et al., 2021). To synthesise the findings drawn from qualitative studies, we used the JBI meta-aggregation approach (Aromataris & Munn, 2020). The JBI approach is particularly aligned with the aims of this study report, because it not only outlines a systematic way of identifying, evaluating, and synthesising qualitative findings but it also involves drawing practical and useful implications from primary qualitative data. Below, we describe the specific methodological steps taken in this part of the review.

Inclusion criteria for RQ4

We defined our eligibility criteria using the SPIDER tool. SPIDER is designed to help researchers formulate research questions for qualitative and mixed-methods studies, especially in the context of systematic reviews and meta-syntheses (Cooke et al., 2012). For this research question, we opted to use this tool rather than the PICO framework due to its suitability for synthesising qualitative and mixed-methods research, allowing for a more nuanced exploration of the experiences and perspectives of caregivers in parenting interventions.

S (Sample): Caregivers of children and young people (aged 0 to 25) with a range of disabilities, including those caused by severe mental illness.

PI (Phenomenon of Interest): Similarly to RQs 1 to 3, and in line with another review commissioned by Foundations (Lewis et al., 2024), for the purpose of this review, ‘parenting intervention’ was defined as a structured set of activities or services, with established eligibility requirements, aimed at enhancing how parents and caregivers approach and fulfil their roles, specifically in terms of parenting knowledge, attitudes, skills, behaviours, and practices (based on World Health Organization, 2022). These interventions are designed to be preventative or treatment-oriented, targeting parents and other caregivers to modify their parenting knowledge, skills, attitudes, or behaviour. The content of parenting interventions may be delivered through various learning activities, either in group settings or individual parent/family-based sessions, with or without the involvement of children, and may be administered by professional or paraprofessional staff in various settings such as the home, a centre, or online (Backhaus et al., 2023).

D (Design): Studies based on interviews and/or focus groups, conducted in person or online.

E (Evaluation): Parents’ and carers’ experiences of attending a parenting intervention for a child or young person with a disability.

R (Research type): Qualitative and mixed-methods studies (i.e. studies must have a qualitative component) including, but not limited to, ethnographies, phenomenology, narrative studies, grounded theory, and case studies; for mixed studies, only qualitative data was included. Due to the number of entries expected and the wide focus of this review, we only included studies that explicitly stated a qualitative methodological approach.

This umbrella review only included studies conducted in high-income countries with comparable child welfare systems to the UK’s, including the following countries: the United Kingdom (England, Wales, Scotland, Northern Ireland), the United States of America, Canada, Australia, New Zealand, and European countries (including the Republic of Ireland, France, Germany, Sweden, Finland, Norway, Denmark, and the Netherlands). The meta-synthesis included papers published in peer-reviewed journals in English from 1990 until May 2024.

Search strategy

The search strategy outlined below was used to capture qualitative studies on the broad spectrum of parenting interventions for caregivers of children and young people with disabilities. They were used in searches carried out via Embase, MEDLINE, PsycInfo, and PubMed. All studies were organised and managed through EndNote and Covidence,[6] with duplicates being removed during the screening process.

1. (ADHD or "ADD" or "allergic rhinitis" or allergy or anemia or anxiety or arthritis or ASD or "Asperger syndrome" or asthma or autis* or asperger* or bipolar or blind* or bronchitis or cardiac or cardiovascular or "cerebral palsy" or chronic or compuls* or "cystic fibrosis" or deafness or delay* or depression or "depressive disorder" or dermatitis or "developmental coordination disorder" or "developmental disab*" or diabetes or difficult* or disabilit* or "down syndrome" or "down's syndrome" or "downs syndrome" or dyscalculia or dyslexia or dyspraxia or eczema or epilepsy or fibromyalgia or "hay fever" or hypermobility or "hearing loss" or heart or hyperactivity or "intellectual disab*" or kidney or "language disorder*" or "language pathology" or "language impairment" or "learning disab*" or "loss of hearing" or "low vision" or mania or manic or metabolic or migraine or "minimal brain dysfunction" or "minor neurological dysfunction" or "motor coordination difficulties" or "motor coordination problems" or "motor delay disorder" or "motor learning difficulties" or "motor dysfunction" or "motor problems" or "motor skills disorder*" or "multiple sclerosis" or "muscular dystrophy" or "non-verbal learning dysfunction" or "perceptual-motor impairment" or OCD or obsess* or "otitis media" or paranoid or "pervasive developmental disorder" or phenylketonuria or Psychosis or Psychotic or renal or "selective mutism" or "special needs" or "spina bifida" or schizo-affective or schizoaffective or schizophrenia or seizure or "sensorimotor difficulties" or "sensory integrative dysfunction" or "sickle cell" or thalassemia or thyroid* or "trisomy 21" or Tourette* or "visual impairment" or "visually impaired" or "visual loss")

AND

2. (adoptive OR caregiver* OR carer* OR caretaker* OR couple* OR famil* OR father* OR foster OR guardian* OR kinship OR maternal OR mother* OR parent* OR paternal)

AND

3. (parent* or famil*) adj4 (program* or intervention* or train* or education or group or therap*)

AND

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[6] See: https://www.covidence.org

4. (qualitative OR interview OR “focus group” OR “grounded theor*” OR theme* OR thematic OR phenomenolog* OR ethnograph* OR “content analys?s” OR “narrative analys?s” OR “discourse analys?s”).

Following the same procedure described in the umbrella review section, proximity operators were adapted accordingly to the syntax supported by each database, so for example ‘adj4’ was substituted by ‘W/4’, ‘NEAR4’, ‘~4’. For platforms where truncation is not supported alongside proximity operators, the following string was used in domain number 3, for example: “Parenting program” [title/abstract:~4] OR “Parenting intervention” [title/abstract:~4] OR “Parenting training” [title/abstract:~4] OR “Parent training” [title/abstract:~4] OR “Parent group” [title/abstract:~4] OR “Parent therapy” [title/abstract:~4] OR “Family program” [title/abstract:~4] OR “Family intervention” [title/abstract:~4] OR “Family training” [title/abstract:~4] OR “Family group” [title/abstract:~4] OR “Family therapy” [title/abstract:~4].

Screening procedure

To ensure consistency in the screening for the meta-synthesis, an initial batch of 50 papers was double screened to refine and clarify the inclusion and exclusion criteria, aiming for a Cronbach’s alpha of at least .75 between raters. After the double-screening process, one researcher reviewed each study at the title and abstract level. Following the title and abstract screening, all potentially suitable texts underwent a full-text review for final inclusion. This step involved a double review by two separate reviewers to guarantee thoroughness and accuracy in the selection process. All studies that passed this initial screening moved to data extraction, appraisal, and synthesis, as described below.

Data extraction

For the meta-synthesis, the following information was extracted:

Publication information:

- Title
- Author(s)
- Year of publication.

Methodology:

- Data collection methods
- Data analysis methods.

Phenomena of interest

- The specific focus of analysis in the selected studies (e.g. caregivers’ broad experience of attending a specific intervention, caregivers’ specific experience of a specific feature of a given intervention, caregivers’ experience of multiple interventions targeted to a specific problem, and so on …).

Participant demographics:

- Caregiver’s characteristics (age, gender, ethnicity, socioeconomic status, etc.)

- Children’s characteristics (age, gender, ethnicity, diagnosis, etc.).

Intervention data:

- Description of intervention(s) (name, content, etc.)
- Delivery mode and format.

Key findings and authors’ conclusions.

Quality and risk of bias appraisal

The quality of each study included in the meta-synthesis was assessed using the JBI checklist for qualitative research (Lockwood et al., 2024). This checklist assesses the congruence between a study’s stated philosophical perspective, its methodology, research questions, and aims. It also includes items on the interpretation and coherence of the results, the researcher’s role in the study, and research ethics. With this checklist, each study received a score on a scale from 0 (indicating very poor quality) to 10 (reflecting excellent quality).

After this initial process of quality and bias appraisal in the meta-synthesis, we conducted a second stage of data extraction and appraisal, following the JBI guidelines on qualitative meta-synthesis (Lockwood et al., 2024). In this step, we extracted the individual findings from each primary qualitative study (such as the ‘themes’ reported). Each finding was then assessed concerning its level of credibility under the following rankings: 1) unequivocal (i.e. findings that include an illustration that is ‘beyond reasonable doubt’, 2) credible (i.e. findings with an illustration that lacks clear association with it and is therefore open to challenge), or 3) not supported (i.e. the findings are not supported by the data).

Data analysis for the meta-synthesis

After extracting the studies’ information and assessing their findings, we analysed the studies using the software NVivo v14. We carried out this analysis in two steps: first, we coded the studies’ results into three broad domains: 1) facilitators for acceptability and engagement, 2) barriers for acceptability and engagement, and 3) intervention impact. Second, we examined the content within each domain and developed synthesised themes from them, describing meaningful recurring themes.

Finally, after formulating these synthesised findings under the three domains (i.e. facilitators, barriers, and intervention impact), we used the GRADE-CERQual (Confidence in the Evidence from Reviews of Qualitative research) approach (Lewin et al., 2018) to assess the confidence in each one of them under four criteria: (1) methodological limitations, (2) coherence, (3) adequacy, and (4) relevance. After the assessment of the four criteria, each synthesised finding was ranked concerning its confidence in four levels: high, moderate, low, or very low.

KEY FINDINGS

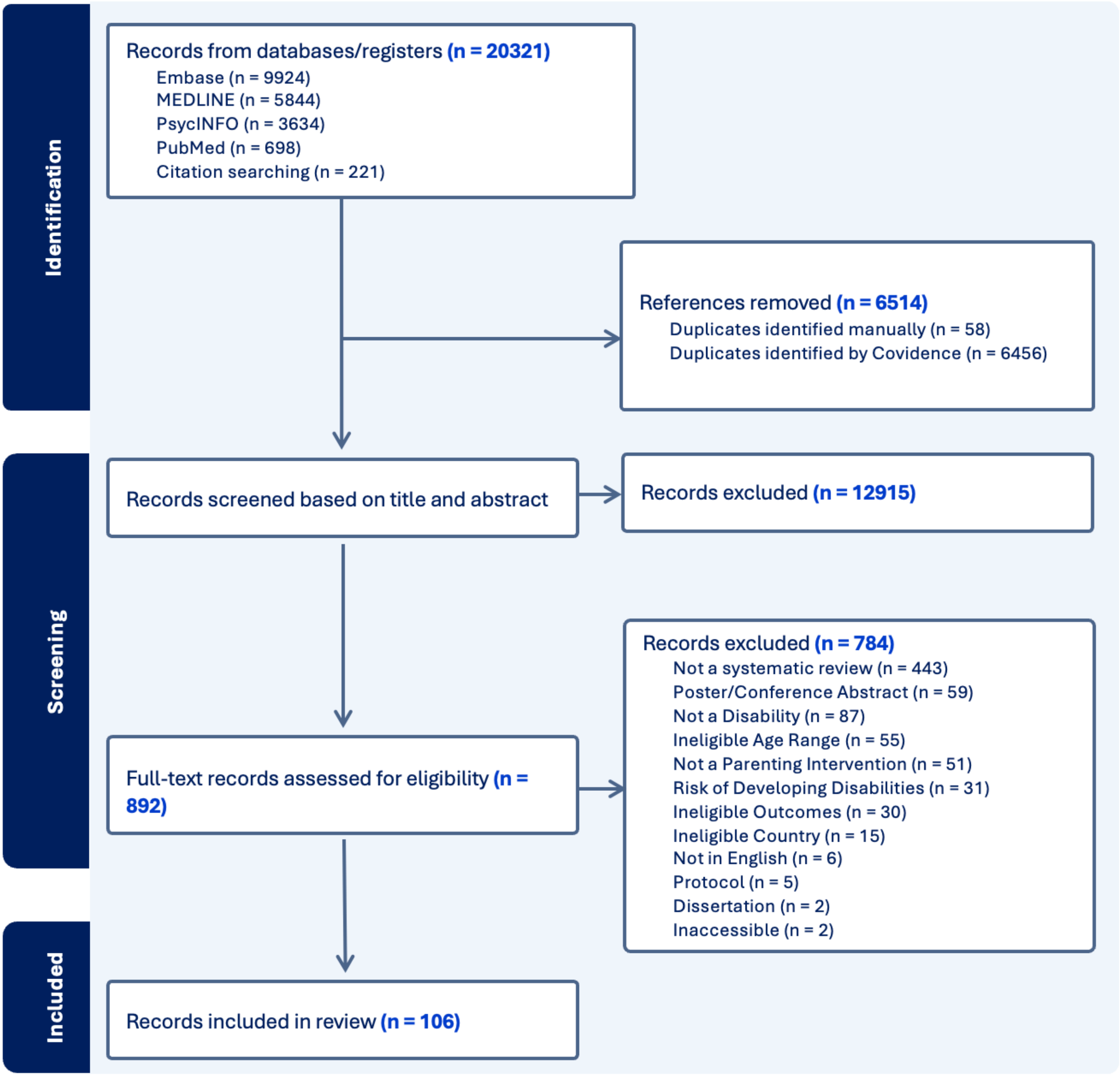
In this section, we present the two streams (quantitative and qualitative) separately, because each addressed different parts of the research questions and followed an independent study procedure, including database searches, study screening, and data analysis. The key findings are organised around each research question.

RQ 1. Overall evidence on effectiveness of parenting interventions

To address RQ1, we used an umbrella review approach to consolidate evidence from systematic reviews on the effectiveness of parenting interventions for parents and carers of children and young people aged 0 to 25 years with a range of disabilities, including those caused by severe mental illnesses.

A total of 20,321 references were imported for screening as part of this umbrella review. Duplicate removal was conducted both manually and using Covidence, resulting in the identification of 6,514 duplicates (58 manually and 6,456 through Covidence). After duplicate removal, 13,807 records remained and were screened against title and abstract criteria, leading to the exclusion of 12,915 records that did not meet the inclusion criteria. Following this initial screening, 892 records were assessed for full-text eligibility. Of these, 783 records were excluded. Following these exclusions, 106 systematic reviews were deemed eligible and included in this umbrella review for further analysis. Figure 1 shows the PRISMA flow diagram illustrating the study selection process.

Figure 1. PRISMA flow diagram of the study selection process in the umbrella review (go to accessibility text)



Overview of included systematic reviews

A total of 106 systematic reviews were included in the analysis, of which 53 (50%) included meta-analyses. These systematic reviews addressed diverse topics, with considerable variation in focus, data sources, and study designs. Full details about the characteristics of the 106 systematic reviews are provided in Appendix B1 Table 1 ‘Characteristics of included studies’, so what follows provides a general overview.

The 106 included systematic reviews examined a wide range of disabilities affecting children, with autistic spectrum disorder (ASD) being the most frequently reported condition, included as a focus in 45 systematic reviews (42.5%). Developmental disabilities were also commonly highlighted, with 20 systematic reviews (18.8%) addressing these, followed by attention deficit hyperactivity disorder (ADHD), reported in 17 systematic reviews (16.0%). Chronic medical conditions such as diabetes and asthma were reported in 10 (9.4%) and 6 systematic reviews (5.7%), respectively, and intellectual disabilities were included in 9 systematic reviews (8.5%). Other conditions, including cerebral palsy (8 systematic reviews, 7.5%), neurodevelopmental disorders (reported in 5 systematic reviews, 4.7%), Down syndrome and developmental delay (each reported in 4 systematic reviews, 3.8%), were also analysed. Physical disabilities, such as cystic fibrosis, traumatic brain injury, and congenital heart disease, were examined less frequently, with each condition reported in three systematic reviews (2.8%). Hearing impairments and atopic dermatitis/eczema were mentioned in two systematic reviews (1.9%). Sensorineural hearing loss, appearance-affecting health condition, non-respiratory sleep disturbance, Rhett syndrome, lissencephaly, psychosocial dysfunction, and food refusal were each mentioned once across all systematic reviews. There were no eligible systematic reviews providing specific data on the effectiveness of parenting interventions for children and young people with severe mental illness (e.g.. psychotic disorders, bipolar disorders) or multiple diagnosis.

The 106 systematic reviews also explored various parenting interventions aimed at supporting families. The most frequently examined interventions included parent-mediated interventions (n=37, 34.9%) and parent training (n=21, 19.8%). Other interventions focused on parent-implemented approaches (n=14, 13.2%), behavioural parent training (n=8, 7.5%), and psychological interventions (n=6, 5.6%).[7] Specific programmes, such as the Triple P Positive Parenting Program and parent management training, were each investigated in four systematic reviews. Emerging intervention types included mindfulness-based training for parents, parenting interventions based on the principles of acceptance and commitment therapy (ACT), and the Stepping Stones programmes, which featured in three systematic reviews each. A range of other specific approaches were investigated in fewer systematic reviews, with most reported in only one or two systematic reviews (see Appendix B1 Table 1 for full details).

Parenting interventions were delivered in various settings to cater to diverse needs and circumstances. Home-based interventions were the most commonly reported, featuring in 48 systematic reviews (45.3%), and typically aimed to equip parents with tailored skills to support their child's development in a familiar environment. Clinical settings, examined in 44 systematic reviews (41.5%), involved structured therapeutic interventions delivered by trained professionals. Educational settings, highlighted in 20 systematic reviews (18.9%), promoted collaboration

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[7] When presenting the findings, the umbrella review, meta-analysis, meta-regression, and qualitative meta-synthesis use somewhat different terms when describing the types of parenting interventions. This is because the categories were derived from different data: from systematic reviews (umbrella review), from individual RCT studies (meta-analysis and meta-regression), and from qualitative studies (meta-synthesis). In this section, we use terms referring to types of parenting interventions based on the terms used in the systematic reviews included, where possible maintaining the same terminology as in the original sources. As such, terms such as "parent-mediated", "parent-delivered", "parent-directed", and "parent-implemented" are not mutually exclusive terms but may refer to types of interventions with degrees of overlap.

between families and educators to address developmental needs, while community settings were featured in 20 systematic reviews (18.9%) and emphasised accessible, peer-led support. Telehealth and virtual environments, discussed in 17 systematic reviews (16.0%), provided remote training and coaching to enhance accessibility for diverse families. Hospital-based interventions, reported in 12 systematic reviews (11.3%), focused on supporting parents in managing caregiving for children with medical conditions. Although we initially aimed to extract data on the number of sessions, session length, and any cultural adaptations made to interventions, insufficient data was available in the systematic reviews to include these elements in the analysis.

The systematic reviews investigated a broad spectrum of child outcomes across multiple domains. Language and communication outcomes, such as expressive and receptive vocabulary, were a major focus, as were behavioural outcomes, including challenging behaviours, ADHD symptoms, and inattention. Emotional and psychological outcomes, such as emotional regulation and psychological flexibility, were also widely examined. Social skills and interactions, including social communication and daily skills, featured prominently in the reviews. Child development outcomes, encompassing cognitive, academic, and motor development, were another significant area of interest. Health and physical outcomes, such as motor function and health-related behaviours, were frequently reported. Additionally, child-specific conditions like ASD symptoms and neurodevelopmental disorder core symptomatology were also investigated.

The systematic reviews also investigated a range of parenting outcomes to assess the effectiveness of various interventions. Parenting practices were the most frequently reported outcome, included in 47 systematic reviews (44.3%). Parenting stress was also commonly explored, featuring in 34 systematic reviews (32.0%). Parent–child interaction was assessed in 23 systematic reviews (21.7%), reflecting its importance in understanding intervention impacts on family dynamics. Parental knowledge was reported in 20 systematic reviews (18.8%), indicating a focus on the educational outcomes of interventions. Parenting efficacy was the least frequently examined outcome, included in 16 systematic reviews (15.0%), but nonetheless represents a critical aspect of parental confidence and capability.

The number of individual empirical studies included in each of the 106 systematic reviews varied substantially, ranging from 2 individual studies (Pennington et al., 2018) to 88 individual studies (Jackson et al., 2016), with an average of 18.56 individual studies (SD=13.32), reflecting the diversity of available research depending on intervention type and disability focus. The systematic reviews identified studies from a variety of academic databases. PsycInfo was the most frequently used, with 89 reviews (83.9%) citing it as a data source, followed by MEDLINE, used in 54 reviews (50.9%), and PubMed, referenced in 50 reviews (47.2%). Other frequently used databases included Web of Science (n=24, 22.6%), Cochrane (n=31, 29.2%), ERIC/EBSCO (n=46, 43.4%), CINAHL (n=42, 39.6%), and Embase (n=41, 38.7%).

The systematic reviews included were conducted over a 20-year period, with publication years ranging from 2004 (Pennington et al., 2004) to 2024 (Kei et al., 2024; Li et al., 2024; Marquet-Doalec et al., 2024; McAloon & Amstrong, 2024; Phillips et al., 2024; Zhou et al., 2024). The individual empirical studies included within the systematic reviews covered a broader time frame, ranging from 1959 to 2021. Among the systematic reviews, 29 exclusively focused on high-income countries, as defined in the eligibility criteria (above), and 38 reviews did not limit which countries studies had been published or conducted in. Notably, 39 reviews did not specify the countries in which the studies were conducted. To clarify, we excluded only those systematic reviews that specifically focused on studies from countries not on the eligibility criteria – e.g. systematic reviews of parenting interventions in low- and middle-income countries. We retained reviews that either focused solely on studies conducted in countries with comparable children's social care systems to the UK's or those that did not specify where studies were conducted, thereby ensuring that potentially relevant evidence was not disregarded due to a lack of geographic detail.

The systematic reviews included individual studies that encompassed a range of study designs. Study designs included randomised controlled trials (RCTs, n=94, 88.7%), quasi-experimental designs (n=53, 50%), single-case designs (n=22, 20.7%), and other methodologies such as pre/post-test designs (n=10, 9.4%). Observational and cohort individual studies were relatively rare (n=3, 2.8% and n=2, 1.9% respectively).

Participant characteristics

Sample sizes within individual studies included in the 106 systematic reviews exhibited wide variability, ranging from small cohorts of fewer than 15 participants (Casagrande & Ingersoll, 2021; Lohan et al., 2015; Whittingham et al., 2011) to large-scale cohorts with over 800 participants (Costa et al., 2021). Although not all systematic reviews reported sample sizes, the total number of participants studied across all papers exceeded 10,000 caregivers in relation to more than 38,000 children. On average, sample sizes for systematic reviews tended to fall between 80 and 200 caregiver participants, with many systematic reviews including sample sizes between 100 and 500 caregiver participants. These disparities in sample sizes were largely due to differences in the types of study design that were included within each review, ranging from small-scale evaluations to large-scale RCTs.

Although 14 out of the 106 systematic reviews did not provide details regarding caregiver demographics, 65 systematic reviews explicitly identified mothers as the caregivers in their results. This maternal focus aligns with broader patterns in parenting intervention research, where mothers are typically the primary participants (e.g. Akemoglu et al., 2020; Beaudoin et al., 2014; Costa et al., 2021; Law et al., 2014; Rutherford et al., 2019; Vargas Londono et al., 2023; Zhou et al., 2024). Parents, in general, were reported as caregivers in 18 reviews (e.g. Beaudoin et al., 2014; Fang et al., 2023), while fathers and grandparents were noted as caregivers in 6 and 3 reviews, respectively (e.g. Cheng et al., 2023; King et al., 2021; Lang et al., 2009; Provenzi et al., 2021; Sun, 2022). Caregiver age was reported in 75 systematic reviews, with ages ranging from 20 to 67 years (mean age = 38.3 years, SD=9.0). However, 31 systematic reviews did not include data on caregiver age.

Child age was recorded in 85 out of the 106 reviews, with the reported range spanning from 0 to 23 years, while 21 reviews did not provide any child age data. The majority of the included children were categorised within the early years (0 to 5 years) or school-age (6 to 12 years) groups. The age of children targeted by the parenting interventions varied significantly across systematic reviews. The youngest recorded children were infants as young as a few weeks old (Morelius et al., 2021; O'Toole et al., 2018; Pennington et al., 2004; Ruskin et al., 2021), while the oldest ranged up to 23 years old in some systematic reviews (Koegel et al., 2020; Mirza et al., 2018; Mulyana et al., 2023; Rispoli et al., 2019; Ratliff-Black and Therrien, 2021). However, most research focused on the impact of parenting interventions on younger children, primarily toddlers and those in elementary school, with some extending to older children aged 6 to 12 (Koegel et al., 2020; Gerow et al., 2018; Rimestad et al., 2019).

The demographic details of children targeted by the parenting interventions were often underreported, particularly in terms of gender. Gender data was reported in 87 systematic reviews, but 19 reviews did not include information on the gender of the children. Where information was available, there was a noticeable gender imbalance, with overall slightly more reports of the impact of parenting interventions on male children (59%). This imbalance was particularly pronounced in research focused on parenting interventions for children with ADHD or ASD, conditions that have higher prevalence rates among boys in the general population (Dekkers et al., 2022; Gerow et al., 2018; Ruane & Carr, 2019; Tellegen & Sanders, 2013; Zwi et al., 2011).

Of the 106 systematic reviews, only 9 provided details on the socioeconomic status and ethnicity of participants. Most reviews did not report these critical demographic characteristics. Among those that did, 2 systematic reviews aimed to look at interventions for caregivers with low socioeconomic status (Heidlage et al., 2020; Vargas Londono et al., 2023). Where reported, systematic reviews primarily reported participants from White middle- and upper-class families (Casagrande & Ingersoll, 2021; Te Kaat-van den Os et al., 2017). A smaller subset of studies considered families from diverse economic and educational backgrounds (Armour, 2005; Rios & Burke, 2021; Zhou et al., 2024). The lack of demographic reporting in systematic reviews of parenting interventions for children and young people with disabilities represents a significant limitation, raising concerns about the generalisability of findings. Addressing these gaps is essential to ensure that interventions are designed and tested for the populations they aim to serve. Given that the reporting of socioeconomic status in the included systematic reviews varied widely, it was not always possible to accurately extract socioeconomic status-related data in a systematic manner. Therefore, conclusions drawn in this regard should be interpreted with caution.

Intervention settings and contexts

The interventions in the included systematic reviews were delivered across diverse settings, with home-based, clinical, community, and telehealth/virtual environments being most commonly used. Forty-eight systematic reviews focused on interventions implemented in home settings (e.g. Cheng et al., 2023; Eccleston et al. 2015; Harrop, 2015). These interventions allowed parents and caregivers to implement strategies within familiar environments. However, these were often done in combination with a secondary training location, usually a clinic (Dekkers et al., 2022; Hornstra et al., 2023; Lang et al., 2009).

Clinical settings (n=44) were the second most common and mostly aimed to address specialised or intensive needs. These included outpatient and inpatient clinics (e.g. Golfenshtein et al., 2016) and neonatal intensive care units for high-risk infants (Kasparian et al., 2019). Clinical settings also served as training locations for strategies to be implemented at home (e.g. Beaudoin et al., 2014; McConachie & Diggle, 2007; Meadan et al., 2009). Primary care and mental health clinics (e.g. Colalillo & Johnston, 2016; Koegel et al., 2020) were frequently chosen for interventions addressing behavioural and developmental disorders, offering professional oversight and resources.

Community settings (n=20), such as schools, community centres, and specialised centres, were also commonly used (e.g. Casagrande & Ingersoll, 2021; Fang et al., 2023). These environments supported structured, group-based, and social learning opportunities. Telehealth and virtual settings (n=17) emerged as effective alternatives, particularly for families in remote or underserved areas. These interventions provided parents of children with ASD, developmental disabilities, or chronic health conditions with flexible, parent-focused support (e.g. Koegel et al., 2020; Li et al., 2024; Nevill et al., 2018). Telehealth was often integrated with other approaches, such as video coaching sessions or remote group meetings, with the aim of addressing logistical barriers to in-person participation. Finally, educational settings, while less commonly reported, were occasionally used to deliver interventions for children in structured environments, because they were considered conducive to learning and skill-building (e.g. Rispoli et al., 2019; O'Donovan et al., 2019).

In terms of format, 21 systematic reviews included parenting interventions that were delivered in group format and 85 systematic reviews in individual formats, with many systematic reviews mixing these approaches based on the intervention setting. Group training was common in community and educational environments, fostering social learning and peer support (e.g. Fang et al., 2023; Gerow et al., 2018). Conversely, individual approaches were more prevalent in home-based and clinical settings, where tailored support was designed to address specific family needs or child behaviours (e.g. Nevill et al., 2018; Te Kaat-van den Os et al., 2017). Telepractice was employed in both group and individual formats, with the aim of offering flexibility and adaptability to a variety of family contexts.

Intervention duration varied widely as reported across systematic reviews. Some systematic reviews reported that they included interventions that lasted only a few weeks, typically with weekly sessions (e.g. Gerow et al. 2018), while others reported interventions that extended over a year (e.g. Conrad et al., 2021). Flexible schedules were often employed, such as the "free play" sessions integrated into everyday activities (e.g. Harrop, 2015), which ran over several months. However, detailed information about the length or intensity of interventions was often not reported, and no systematic reviews reported on specific cultural adaptations made for specific populations.

Categorisation of types of parenting interventions

Given the vast range of specific parenting interventions included within the 106 systematic reviews, a categorisation was developed to aid with the reporting of findings in the umbrella review section. This categorisation spans six types of parenting interventions: 1) parenting interventions for neurodevelopmental disorders, 2) parenting interventions for children with chronic conditions, 3) parent-implemented communication and language interventions, 4) parenting education and structured training programmes, 5) digital parenting interventions, and 6) parental wellbeing and family empowerment interventions. Within each category, specific types of interventions or general categories of intervention are listed, reflecting how they were reported in the systematic reviews.

It is important to note that this categorisation does not provide an in-depth analysis of each intervention's theoretical model or orientation, which in most cases was not described in the systematic reviews. Instead, it offers a structured presentation of intervention types based solely on the names and descriptions provided in the systematic reviews. Some overlap may exist across categories, because certain interventions may be applicable across multiple domains. Where systematic reviews had themselves grouped together certain parenting interventions into a broader category (e.g. “parent training interventions”), we made use of the categories within those systematic reviews. Table 4 presents a categorisation of parenting interventions used in the reporting of this umbrella review.

Table 4. Categorisation of parenting interventions for the umbrella review

Child conditions	Parenting intervention categorisation	Intervention programmes (lead author, year)
Parenting interventions for neurodevelopmental disorders in children		
Autism spectrum disorder (ASD)	**Parent training interventions**	• Parent training interventions for toddlers with autism spectrum disorder (Beaudoin, 2014) • Parent training for children with autism spectrum disorder (Deb, 2020) • Group-based parent training interventions for parents of children with autism spectrum disorders (O'Donovan, 2019) • Training programmes for parents of children with autism spectrum disorders (Patterson, 2012) • Parent training for disruptive behaviour in children with autism spectrum disorder (Postorino, 2017) • Parent training interventions in children with autism spectrum disorder (Tabatabaei, 2022) • Parent training incorporated in behavioural sleep interventions for children with autism spectrum disorder and/or intellectual disabilities (Kirkpatrick, 2019) • Early intervention with parents of children with autism spectrum disorders (Rojas-Torres, 2020)
	Parent-implemented interventions	• Parent-implemented interventions on outcomes of children with autism (Cheng, 2023) • Parent-mediated interventions for children and adolescents with autism spectrum disorders (Conrad, 2021) • Parent-mediated interventions for restricted and repetitive behaviours in young children with autism spectrum disorder (Harrop, 2015) • Parent-mediated music interventions with children with ASD (Hernandez-Ruiz, 2021) • Parent-implemented early intervention for young children with autism spectrum disorder (McConachie, 2007) • Parent-implemented interventions to promote social and communicative behaviour of young children with autism spectrum disorders (Meadan, 2009)

Child conditions	Parenting intervention categorisation	Intervention programmes (lead author, year)
Parenting interventions for neurodevelopmental disorders in children		
		- Parent-mediated early intervention for young children with autism spectrum disorders (ASD) (Oono, 2013) - Parent-mediated interventions for school-age children with ASD (Ratliff-Black, 2021) - Parent characteristics in parent-mediated interventions for children with autism spectrum disorder (Shalev, 2020)
Attention deficit hyperactivity disorder (ADHD)	**Behavioural parent training**	- Behavioural parent training for children with attention-deficit/hyperactivity disorder (Doffer, 2023) - Behavioural parent and teacher training work for children with ADHD (Hornstra, 2023) - Behavioural parent training for children with attention deficit hyperactivity disorder (Lee, 2012) - Behavioural parent training for school-aged children with ADHD (Marquet-Doleac, 2024)
	Other parent training interventions	- Parenting interventions for ADHD (Coates, 2015) - Parent training for children with attention-deficit/hyperactivity disorder (Dekkers, 2022) - Parent training for preschool children with or at risk of ADHD (Rimestad, 2019) - Parent training interventions for attention deficit hyperactivity disorder (ADHD) in children aged 5 to 18 years (Zwi, 2011)
	Other parenting interventions	- Mindfulness parent training on parenting stress and children's ADHD-related behaviours (Lee, 2022) - Parental interventions for preschool ADHD (Mulqueen, 2015) - Parent–child interaction therapy (PCIT) for youth with attention-deficit/ hyperactivity disorder (ADHD) (Phillips, 2024)

Child conditions	Parenting intervention categorisation	Intervention programmes (lead author, year)
Parenting interventions for neurodevelopmental disorders in children		
Developmental disabilities	**Parent training interventions**	• Parent training interventions with parents of children with developmental disabilities (Ragni, 2022) • Parent management training programmes on disruptive behaviour for children with a developmental disability (Skotarczak, 2015)
	Other parenting interventions	• Parenting interventions that promote child protection and development for preschool-age children with developmental disabilities (Fang, 2023) • Parent–child observation in parent-mediated programmes for children with developmental disabilities and externalising disorders (Kei, 2024) • Non-pharmacological interventions for non-respiratory sleep disturbance in children with neurodisabilities (Scantlebury, 2018)

Child conditions	Parenting intervention categorisation	Intervention programmes (author, year)
Parenting interventions for other child conditions		
	Parenting interventions for children with chronic conditions	• Interactive media for parental education on managing children chronic condition (Annaim, 2015) • Psychological interventions for parents of children and adolescents with chronic illness (Eccleston, 2015) • Acceptance and commitment therapy for psychological and behavioural changes among parents of children with chronic health conditions (Jin, 2021) • Parent and family-based interventions for children and adolescents with chronic medical conditions (Law, 2014) • Parenting interventions for parents of children with type 1 diabetes (Lohan, 2015) • Parenting interventions for child chronic health conditions (Mitchell, 2020) • Enriched environments and motor outcomes in cerebral palsy (Morgan, 2013) • Home programmes in paediatric occupational therapy for children with cerebral palsy (Novak, 2006) • School-based family asthma educational programmes in quality of life and asthma exacerbations in asthmatic children aged 5 to 18 (Walter, 2016) • Parenting interventions for children with cerebral palsy (Whittingham, 2011) • Acceptance and commitment therapy (ACT) for caregivers of children with chronic conditions (Wright, 2023) • Patient education programmes in paediatric atopic dermatitis (Zhao, 2020) • Problem-solving skills training for parents of children with chronic health conditions (Zhou, 2024)

Child conditions	Parenting intervention categorisation	Intervention programmes (lead author, year)
	Parent-implemented communication and language interventions	• Parent-implemented language and communication interventions conducted via telepractice (Akemoglu, 2020) • Symbolic and deictic gestures as a tool to promote parent–child communication in the context of hearing loss (Colombani, 2023) • Parent-implemented functional communication training for children with ASD (Gerow, 2018) • Parent-implemented language interventions on child linguistic outcomes (Heidlage, 2020) • Caregiver coaching for language facilitation in early intervention for children with hearing loss (King, 2021) • Training parents to implement communication interventions for children with autism spectrum disorders (ASD) (Lang, 2009) • Parent-mediated interventions for promoting communication and language development in young children with Down syndrome (O'Toole, 2018) • Interaction training for conversational partners of children with cerebral palsy (Pennington, 2004) • Parent-mediated communication interventions for improving the communication skills of preschool children with non-progressive motor disorders (Pennington, 2018) • Parent-implemented language interventions (Roberts, 2011) • Non-pharmacological interventions for stuttering in children 6 years and younger (Sjøstrand, 2021) • Parent-implemented language interventions for children with a developmental delay (Te Kaat-van den Os, 2017) • Parent-implemented home therapy programmes for speech and language (Tosh, 2017)

Child conditions	Parenting intervention categorisation	Intervention programmes (lead author, year)
	Parenting education and structured training programmes	• Parents Plus systemic, solution-focused parent training programmes (Carr, 2017) • Parenting cognition and affective outcomes following parent management training (Colalillo, 2016) • Triple P Positive Parenting Program on parenting (deGraaf, 2008) • Group cognitively enhanced behavioural based parent programmes designed for reducing disruptive behaviour in children (Gavita, 2008) • Parent education programmes for special health care needs children (Jackson, 2016) • Parent education for children with disabilities (Jang, 2023) • Incredible Years parenting programme (Leijten, 2018) • Parent management training for the treatment of child disruptive behaviour (Michelson, 2013) • Special education training programmes for parents of children with disabilities (Rios, 2021) • Stepping Stones Triple P for parents of children with disabilities (Ruane, 2019) • Behavioural skills training for parents to intervene with their children (Schaefer, 2021) • Behaviour skills training for family caregivers of people with intellectual or developmental disabilities (Sun, 2022) • Stepping Stones Triple P Positive Parenting Program for children with disability (Tellegen, 2013) • Training culturally diverse caregivers to decrease their child's challenging behaviours (Vargas Londono, 2023)

Child conditions	Parenting intervention categorisation	Intervention programmes (lead author, year)
	Digital parenting interventions	• Online behavioural parenting interventions for disruptive behavioural disorders (McAloon, 2023) • Online behavioural parenting interventions on child outcomes, parenting ability and parent outcomes (McAloon, 2024) • Digital interventions to improve health literacy among parents of children aged 0 to 12 years with a health condition (Morelius, 2021) • Internet-based interventions in family-centred empowerment among children with chronic diseases (Mulyana, 2023) • Parent-mediated telehealth interventions in children with autism spectrum disorder (Pan, 2023) • Parent-mediated intervention training delivered remotely for children with autism spectrum disorder living outside urban areas (Parsons, 2017) • Technology-assisted parent-mediated interventions for children with ASD (Pi, 2022) • Use of video-feedback interventions with parents of children with neurodevelopmental disabilities (Provenzi, 2020) • Online parent-implemented interventions for children with neurodevelopmental disorders (Tan-MacNeill, 2021) • Caregiver training via telehealth on behavioural procedures (Unholz-Bowden, 2020) • Managing autism spectrum disorder in the pandemic using internet-based parent-mediated interventions (Yosep, 2022)

Child conditions	Parenting intervention categorisation	Intervention programmes (lead author, year)
	Parental wellbeing and family empowerment interventions	• Family empowerment interventions for children with special healthcare needs (Casagrande, 2021) • Interventions to improve psychosocial outcomes in parents of children with appearance-affecting health conditions (Costa, 2021) • Interventions for reducing parenting stress in families with paediatric conditions (Golfenshtein, 2016) • Mental health care for parents of babies with congenital heart disease during intensive care unit admission (Kasparian, 2019) • Psychological interventions targeting mental health and the mother–child relationship in autism (Kulasinghe, 2023) • Parent-focused interventions for improving the mental health of parents and their children with autism spectrum disorder (Li, 2024) • Managing stress levels of parents of children with developmental disabilities (Lindo, 2016) • Interventions to improve outcomes for parents of children with autism spectrum disorder (MacKenzie, 2022) • Parental activation interventions for parents of children with special health care needs (Mirza, 2018) • Family-centred care in early intervention (McCarthy, 2022) • Empowerment-based interventions on child and parent outcomes in the paediatric oncology setting (Nurhidayah, 2023) • Mindfulness training for parents of children with special needs (Petcharat, 2017) • Parent-focused interventions for older children or adults with ASD and parent wellbeing outcomes (Rutherford, 2019) • Mindfulness and acceptance interventions for parents of children and adolescents diagnosed with chronic medical conditions (Ruskin, 2021) • Peer support interventions for parents and carers of children with complex needs (Sartore, 2021) • Family-oriented interventions for children with acquired brain injuries (Shen, 2023)

Heterogeneity of meta-analyses included in the umbrella review

Heterogeneity was a common feature of the meta-analyses included in this umbrella review, as reported by the reviews themselves. Roughly half of the meta-analyses (n=51, 48.1%) conducted statistical tests for heterogeneity, most commonly employing measures such as Cochran's Q and/or I^2. The high prevalence of non-reported entries (n=55, 51.9%) in heterogeneity test data emphasises the need for more transparent reporting of meta-analytic heterogeneity to facilitate better interpretation and understanding of the data being analysed.

The majority of meta-analyses reported moderate (n=14) to high (n=26) overall heterogeneity, indicating variability in effect sizes within the included meta-analyses. Authors across the reviews frequently acknowledged heterogeneity as a limitation, noting its impact on the generalisability of findings. Key contributors to this heterogeneity included variability in study designs, intervention protocols, and outcome measures used. These factors make it challenging to draw consistent conclusions across systematic reviews.

Many systematic reviews provided detailed results of outcome-related, measure-related, symptom-related, or rating-related heterogeneity tests (Cheng et al., 2023; Conrad et al., 2021; Heidlage et al., 2020; Tarver et al., 2019). Generally, measures or subjective ratings of behaviour exhibited high heterogeneity across systematic reviews, potentially due to differences in how the outcomes were measured or variability in methodological rigour. This underscores the importance of examining heterogeneity within and across domains, because pooled tests may obscure significant patterns. Although some meta-analyses identified systematic reviews with low heterogeneity (Conrad et al., 2021; Eccleston et al., 2015; Hornstra et al., 2023), this was typically observed when focusing on specific aspects, such as heterogeneity for a particular outcome, rather than overall study heterogeneity.

While the inclusion of diverse interventions and populations reflects real-world complexities, significant heterogeneity underscores the need for caution when interpreting pooled results and highlights the importance of further standardisation in future research.

Evaluation of methodological quality of systematic reviews using AMSTAR 2

The 106 systematic reviews were evaluated using the AMSTAR 2 tool, a standardised instrument for assessing the quality, rigour, and reliability of systematic reviews. A detailed breakdown of AMSTAR 2 ratings, including the distribution of quality categories across the dataset, is available in Appendix B2 Table 2 'AMSTAR 2 ratings for the 106 systematic reviews included in the umbrella review'.

The overall quality ratings revealed significant variability in methodological rigour among the included reviews. Most reviews (n=84, 79.25%) were classified as having "critically low confidence". This classification indicates substantial methodological shortcomings that weaken the reliability of their findings. A further 14.15% (n=15) were rated as "low confidence", meaning they demonstrated notable limitations but fewer critical flaws than the majority. Only 5.66% (n=6) of the reviews met the standards for "high confidence", indicating strong adherence to methodological criteria and robust quality. One review (0.94%) achieved a rating of “moderate confidence”, reflecting reasonable quality but with room for improvement in some areas.

The analysis identified a substantial number of what the AMSTAR 2 tool considers “critical” and “non-critical” flaws across the systematic reviews. On average, the reviews exhibited a mean of 3.21 critical flaws, with scores ranging from 0 – indicating higher quality – to 7, indicating significant methodological issues. Non-critical flaws had a mean of 3.26 per review, with scores ranging from 0 to 8. These flaws affected multiple areas, with critical issues frequently observed in transparency and bias management across studies.

Despite these overall ratings, several reviews performed well on key AMSTAR 2 items. A total of 70 reviews (66.04%) effectively framed their research questions using the PICO framework, ensuring clarity and structure. Adequate risk of bias (ROB) assessments for included studies were demonstrated in 37 reviews (34.91%), while 47 reviews (44.33%) employed appropriate statistical methods to combine results. Additionally, 73 reviews (68.86%) accounted for ROB in individual studies when interpreting or discussing their findings. Among reviews that conducted meta-analyses (n=68), 55 reviews (80.8%) assessed the potential impact of ROB in individual studies on results. Furthermore, 51 reviews (48.11%) explained their inclusion criteria for included studies. A total of 78 reviews (73.6%) performed study selection in duplicate, and 64 reviews (60.37%) performed data extraction in duplicate, which minimised the potential for error. Additionally, 77 reviews (72.6%) reported potential sources of conflict of interest, demonstrating transparency. Together, these aspects of the AMSTAR evaluation highlight areas of methodological rigour, showcasing adherence to important methodological standards in these areas.

However, several common weaknesses were apparent across the dataset. Only a small subset of reviews (n=20; 18.87%) fully justified the exclusion of specific studies from their dataset, while just 13 reviews (12.26%) described their sources of funding. Limited use of statistical methods to address risk of bias was another recurring issue. The use of comprehensive literature search strategies was limited, with only 13 reviews (12.26%) fully meeting and 32 reviews (30.18%) partially meeting the criteria.

Of the studies that performed narrative syntheses (n=52), only 27 reviews (51.9%) investigated and considered publication bias. Twenty-nine reviews (27.3%) described the included studies in adequate detail, while 61 studies (57.5%) partially satisfied this criterion. Finally, only 34 studies (32.08%) provided a satisfactory explanation for, and discussion of, heterogeneity observed in the results. These shortcomings were most prominent in reviews rated as low or critically low confidence, underscoring widespread deficiencies in these areas.

Although some systematic reviews demonstrated high methodological quality and adhered closely to AMSTAR 2 standards, the majority exhibited what AMSTAR 2 classifies as critical weaknesses. Concerns have been raised previously that the AMSTAR 2 tool may not have sufficient discrimination capacity, leading to some high-quality systematic reviews being rated as low or critically low confidence (Li et al., 2022). However, the ratings also underscore the need for improved training and guidance on conducting systematic reviews to ensure more reliable and transparent evidence synthesis. Appendix B2 Table 2 provides further insight into the distribution of quality categories and critical flaws across the dataset.

Quality appraisal conducted by the systematic reviews included in the umbrella review

The methodological quality of the systematic reviews included in this umbrella review varied considerably, with many reviews highlighting concerns about the robustness of their included individual studies. Notably, 22 (20.7%) of the reviews did not report performing a quality appraisal of the studies included within their review, raising concerns about the reliability of their findings. Six systematic reviews (5.7%) used self-defined appraisal frameworks, potentially complicating comparisons across reviews. The most commonly used tools were the Cochrane Risk of Bias Tool (RoB 2) (n=31, 29.2%) and the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) (n=15, 14.2%), underscoring their popularity for systematic quality assessment across meta-analyses in the field.

Other appraisal tools employed by systematic reviews to assess the quality of individual studies, though less commonly used, included the Joanna Briggs Institute (JBI) (n=4), Risk of Bias in Non-Randomised Studies - of Interventions (ROBINS-I) (n=3), Down's and Black Quality Checklist (n=4), What Works Clearinghouse (WWC) (n=3), American Academy for Cerebral Palsy and Developmental Medicine Guidelines (AACPDM) (n=3), Mixed Methods Appraisal Tool 2018 (MMAT) (n=3), Horner et al.'s (2005) Quality Indicators (n=2), Jadad Scale for Reporting RCTs (n=2), and the Effective Public Health Practice Project Quality Assessment Tool (EPHPP) (n=2). Additionally, several appraisal tools were used by only one review, including the Rating for Methodological Rigor, Melnyk's Critical Appraisal Guide for Quantitative Systematic reviews, Crowe Critical Appraisal Tool (CCAT), Dixon-Woods's (2006) Evidence-Based Practice Framework, Quality Indicators in Single-Case Research on Psychosocial Interventions for Individuals with ASD, Kmet Appraisal Checklist, PEDRO Scale, Newcastle-Ottawa Scale, Journal of Clinical Child and Adolescent Psychology (JCCAP), Scientific-Merit Rating Scale (SMRS), Quality Assessment Tool for Quantitative Systematic reviews, and the Critical Appraisal Skills Programme (CASP). The use of these niche tools may reflect their unique applicability and suitability for certain study types or populations.

This variability in tools reflects a fragmented approach to quality appraisal within systematic reviewing, which can make it challenging to compare methodological quality across systematic reviews because different tools assess related but distinct domains. This underscores the importance of promoting standardised tools to enhance comparability in future reviews, though this may not always be feasible.

In addition to appraisal tools, some systematic reviews employed reporting guidelines. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was used in eight systematic reviews, and Single-Case Reporting Guidelines in BEhavioural Interventions (SCRIBE) and Consolidated Standards of Reporting Trials (CONSORT) were used in one study each. Although these guidelines are not quality appraisal tools, their use alongside appraisal tools reflects researchers' efforts to produce high-quality research.

Fifteen systematic reviews used more than one quality appraisal tool, demonstrating efforts to enhance methodological rigour. Additionally, five systematic reviews combined an appraisal tool with a reporting guideline. Reviews that did so showcased higher methodological rigour by leveraging multiple frameworks to assess study quality across different domains.

Regarding quality appraisal, a significant proportion of reviews identified at least some of their included studies as being of low quality (n=37; 44%) or moderate quality (n=38; 45.2%), and only 8 reviews (9.5%) rated their included studies high quality. This distribution highlights a predominance of low- and moderate-quality evidence in the field, reflecting concerns about methodological rigour. Twenty-two systematic reviews (20.7%) did not report quality ratings of individual studies. Only three reviews conducted sensitivity analyses to assess the impact of methodological quality on findings. The absence of such analyses limits understanding of how study design and reporting influence overall conclusions.

Effectiveness of parenting interventions for child outcomes

In this section we report on the effectiveness of parenting interventions in improving child outcomes. Eighty-three of the 106 systematic reviews reported the effectiveness of parenting interventions on child outcomes (see Appendix B3 Table 3 'Child outcomes reported by the 106 systematic reviews included in the umbrella review'). Outcomes are reported based on five categories of disability: 1) developmental disabilities (including neurodevelopmental disorders such as ASD, ADHD, behaviours that challenge the caregivers, intellectual disability, and language disorders, as well as developmental delay), 2) chronic medical conditions (such as diabetes, asthma, cancer, cystic fibrosis, traumatic brain injury, chronic pain, atopic dermatitis/eczema, and congenital heart disease), 3) physical disabilities (including hearing loss/impairment and cerebral palsy, which can also be considered a developmental disability), 4) unspecified disabilities, and 5) children with special healthcare needs.

The five categories of disabilities presented in this review reflect the classifications used in the included systematic reviews. These were the only types of disabilities identified in the evidence for the umbrella review. With regard to definitions, we follow the terminology used in the original systematic reviews, which were not always consistent with each other. Some categories, such as 'developmental disabilities' and 'neurodevelopmental disorders,' may overlap, and certain conditions (e.g. cerebral palsy) could be classified under multiple categories. We acknowledge this potential overlap and have added a note in the limitations section to make this clear. However, because the objective of the umbrella review was to summarise how disabilities were classified in existing systematic reviews, we maintained consistency with the terminology used in those sources. In the results below, we group the systematic reviews in a way that provides a meaningful perspective on the effect of parenting interventions across different types of disability, and is aligned with the Equality Act 2010.

Developmental disability

Twenty systematic reviews evaluated the impact of parenting interventions on children with developmental disabilities – i.e. where the systematic review was not focused on one specific type of developmental disability. The reviews included evaluations of a very wide range of parenting interventions, including a range of parent-mediated interventions (n=8), followed by parent training programmes (n=2) and remote (n=1).

Parent-implemented language interventions demonstrated positive impacts on receptive and expressive language skills, vocabulary diversity, and lexical density in children with developmental disabilities (Roberts & Kaiser, 2011; Te Kaat-van den Os et al., 2017). Roberts et al. (2011) found a significant effect ranged from g=0.35, 95%CI [0.05, 0.65] for receptive language to g=0.82, 95%CI [0.37, 1.38] for expressive syntax. Similarly, Te Kaat-van den Os et al. (2017) reported positive effects on children's communication, including significant increases in the frequency of specific aspects of language (i.e. vocabulary diversity and lexical density). Online parent-implemented interventions for children with neurodevelopmental disorders also showed significant improvements in language and social communication skills (e.g. Akemoglu et al., 2020). Parent-mediated music interventions further enhanced communication outcomes by improving children's receptive communication and parent–child relationships while fostering social interaction. The generalisation of music skills to daily life further benefited both children and parents (Hernandez-Ruiz, 2021).

Parent-mediated programmes effectively addressed externalising, disruptive, and challenging behaviours. Cognitive-behavioural interventions using parent–child observation demonstrated significant improvements in managing externalising and challenging behaviours (Kei et al., 2024). Ragni et al. (2022) reviewed parent training interventions and reported reductions in challenging behaviours, although consistency varied depending on the measurement method (e.g. parent reports vs what the review refers to as "expert" observations – which, in the systematic review, appears to refer to professionals' and practitioners' observations). Parenting programmes such as the Stepping Stones Triple P were effective in reducing behavioural problems in children with disabilities (Tellegen & Sanders, 2013; Ruane & Carr, 2019). Specifically, Tellegen & Sanders (2013) found a significant effect in the meta-analysis (d=0.54, 95% CI [0.37, 0.70], p<.001). Parent management training (PMT) also demonstrated significant reductions in disruptive behaviours, highlighting its utility as an effective strategy (Skotarczak and Lee, 2015; (g=0.39, 95% CI [0.15, 0.63], p=.001). Telehealth caregiver training using applied behavioural analysis-based procedures further showed reductions in challenging behaviours and increases in skill acquisition for most children, though a minority of systematic reviews reported limited improvements, with no negative outcomes (Unholz-Bowden et al., 2020).

Video-feedback interventions (VFI) for parents of children with neurodevelopmental disorders consistently reduced aggressive and disruptive behaviours, with improvements extending to follow-up measures (Provenzi et al., 2020). VFI also improved communicative and vocal skills and developmental quotients, underscoring their effectiveness for behavioural outcomes (Provenzi et al., 2020). Culturally adapted caregiver training programmes moderately reduced challenging behaviours in children with ASD, developmental disabilities, and psychosocial dysfunction, highlighting their applicability across diverse populations (Vargas Londono et al., 2023; k=11, Hedges' g=−0.45, SE=0.13, 95% CI [−0.77, −0.13], p<.05).

Home-based programmes in paediatric occupational therapy aimed at improving motor function yielded mixed results, with some interventions showing limited effectiveness (Novak & Cusick, 2006). Parent-mediated music interventions also suggested positive effects on motor skills through the generalisation of learned behaviours to daily routines (Hernandez-Ruiz, 2021).

Parent-directed interventions for non-respiratory sleep disturbances in children with developmental disabilities reduced sleep onset latency, leading to improved daytime behaviour and cognition (Scantlebury et al., 2018). However, limited evidence and study heterogeneity precluded definitive conclusions (Scantlebury et al., 2018).

Parenting interventions for preschool-aged children with developmental disabilities demonstrated significant reductions in behavioural problems, a key risk factor for violence against children (Fang et al., 2023). Improvements were also observed in language and social skills. However, no significant effects were reported on motor, adaptive living, or cognitive skills (Fang et al., 2023).

Parenting interventions for children with developmental disabilities were assessed using a wide range of child outcomes, including communication, behaviour, motor skills, sleep, and general development. In sum, most parenting interventions for children with developmental disabilities, such as Stepping Stones Triple P, telehealth caregiver training, and video-feedback interventions, showed promising results.

Neurodevelopmental disorders

Five systematic reviews addressed parenting interventions for children with non-specified neurodevelopmental disorders. The reviews included evaluations of a range of parenting interventions, including three technology-assisted interventions such as the video-feedback intervention (Provenzi et al., 2020), parent–child interaction therapy (Golfenshtein et al., 2016), and Music Intervention (Hernandez-Ruiz, 2021).

Online parent-implemented interventions demonstrated significant improvements in child-related outcomes, such as language and social communication skills, in most systematic reviews. However, some interventions reported mixed or non-significant results, which limited their impact on child outcomes (Tan-MacNeill et al., 2021). Parent-mediated music interventions also showed positive effects, enhancing children’s social interaction, receptive communication, and parent–child relationships through improved parenting skills (Hernandez-Ruiz, 2021). Generalisation of music skills to daily contexts further benefited both children and parents (Hernandez-Ruiz, 2021).

Caregiver training via telehealth using applied behavioural analysis (ABA)-based interventions showed positive outcomes for most children, including reductions in challenging behaviours and increased skill acquisition (Unholz-Bowden et al., 2020). Although a minority of individual studies in the systematic reviews of telehealth parent training interventions reported limited improvements compared with baseline measures, no negative outcomes were observed (Unholz-Bowden et al., 2020). These findings highlight the potential of telehealth as a flexible and effective method for addressing the needs of children with neurodevelopmental disorders.

Parent-directed interventions targeting non-respiratory sleep disturbances in children with neurodisabilities demonstrated benefits, such as reduced sleep onset latency (SOL), leading to improved daytime behaviour and cognition (Scantlebury et al., 2018). However, limited evidence and heterogeneity across systematic reviews precluded definitive conclusions (Scantlebury et al., 2018).

VFI for parents of children at neurodevelopmental risk consistently demonstrated positive effects on behavioural and developmental outcomes (Provenzi et al., 2020). Reductions in aggressive, disruptive, and emotionally negative behaviours were observed, alongside improvements in communicative and vocal skills and developmental quotients. These benefits often persisted in follow-up assessments, underscoring the long-term impact of VFI on child outcomes (Provenzi et al., 2020).

Overall, parenting interventions for children with non-specified neurodevelopmental disorders demonstrated effectiveness across multiple domains, including core symptoms, social interaction, sleep, and behaviour. Interventions such as telehealth-based caregiver training, parent-mediated music programmes, and VFI showed significant potential, although mixed findings highlight the need for further research to refine and optimise these approaches.

Autism spectrum disorders (ASD)

A total of 46 systematic reviews reported on the outcomes of parenting interventions for children with ASD. Seven of these systematic reviews did not report child-related outcomes, while the remaining 39 all included child-related outcomes. The reviews evaluated a wide range of parenting interventions targeting various domains. The most frequently evaluated intervention type was parent-mediated interventions (n=24), followed by parent training (n=11) and behavioural interventions (n=11). Targeted outcome domains included social communication "problem behaviours", adaptive behaviours, and academic and cognitive outcomes, which will be discussed in detail in the following section. Overall, the reviews reported positive effects of parenting interventions; however, a minority presented mixed or unclear findings. Where we assigned "mixed or unclear results", this indicates that in the systematic review, some individual empirical studies may favour the intervention groups while others do not, or the intervention may be effective for certain child outcomes but not for all, making it difficult for the systematic review to draw a definitive conclusion.

Social communication outcomes for children with ASD

Twenty-five systematic reviews reported on social communication outcomes in parenting interventions for children with ASD. Parenting interventions generally improved some aspects of social and communication skills. Among the 12 systematic reviews that reported outcomes on language development, eight highlighted the effectiveness of parent-mediated interventions, especially those targeting communication, language, and social skills (e.g., Parsons et al., 2017; Lang et al., 2009). Roberts & Kaiser (2011) found significant positive impacts on receptive (g=0.35, 95% CI [0.05, 0.65]) and expressive language skills (g=0.82, 95% CI [0.37, 1.38]) in children with and without intellectual disabilities. However, three systematic reviews (e.g. Oono et al., 2013; Pi et al., 2022) reported no significant results regarding social communication outcomes, and two others (e.g. Nevill et al., 2018; weighted Hedges' g=0.18) showed mixed findings. For example, Heidlage et al. (2020) noted improvements in expressive vocabulary (g=0.27, 95% CI [0.04, 0.10]) but no significant changes in receptive vocabulary. Overall, outcomes suggested a positive relationship between parent-implemented interventions and language development, although results varied based on the targeted language function.

Sixteen systematic reviews examined the impact of parenting interventions on the child's general social communication, focusing on social skills, interactions, and behaviours. Most systematic reviews (n=13) reported effectiveness for various interventions, including parent-mediated programmes (e.g. Meadan et al., 2009; Nevill et al., 2018; Rojas-Torres et al., 2020), parent training (e.g. Tabatabaei et al., 2022; Cheng et al., 2023), music interventions (Hernandez-Ruiz, 2021), and school-based interventions (Rispoli et al., 2019). For example, Rispoli et al. (2019) noted improvements in social-emotional functioning, communication, socialisation, and emotion regulation with school-based interventions that included parents. However, Pi et al. (2022) observed no effects on social skills or communication for children with ASD (MD=0.75, 95% CI [−0.16, 1.68]; n=282; k=6; I^2= 39%), and Beaudoin et al. (2014) reported inconsistent socio-communicative gains across a range of RCTs. O'Donovan et al. (2019) identified only one study with significant improvements in socialisation skills (Tonge et al., 2014). Despite variability, the majority of systematic reviews on parent-mediated interventions supported their effectiveness in improving social communication outcomes. In contrast, most studies reporting no or unclear results were associated with parent training programmes (e.g. Beaudoin et al., 2014; O'Donovan et al., 2019).

Three studies specifically targeted social communication by measuring child-initiated conversation in the context of parent–child interaction. Two systematic reviews (Hernandez-Ruiz, 2021; Kulasinghe, et al. 2023) reported positive outcomes, with Kulasinghe et al. (2023) highlighting improvements in child responsiveness, initiations, functional emotional development, and joint attention. In contrast, Oono et al. (2013) found inconclusive evidence regarding child initiations in parent–child interactions.

"Challenging behaviours" in children with ASD

The impact of parenting interventions on "challenging behaviours" was reported on in 12 systematic reviews. Parent-mediated interventions and parent training consistently showed improvements in this domain (n=11), with effect sizes ranging from small to strong. For example, Postorino et al. (2017) concluded that parent training effectively reduced "disruptive behaviours" in children with ASD (SMD = −0.59, medium effect size). However, Pan et al. (2023) reported mixed findings, with significant decreases in "problem behaviours" in two included individual studies (p=.002, 95% CI [−2.70, −0.60]), I^2=76%) but no differences in three others (p=.25, 95% CI [−1.36, 0.35]), I^2=82%). Emotional regulation outcomes across a range of parenting interventions were unclear, with mixed findings reported by Hernandez-Ruiz (2021), Hendrix (2022), and Pi et al. (2022; (SMD=1.25, 95% CI [0.54–1.96]; n = 112; studies = 3; I^2 = 63%)). Additionally, Pi et al. (2022) highlighted the low quality of individual studies included in their review. The impact of parenting interventions on restricted and repetitive behaviours were reported in three systematic reviews, examining parent-mediated interventions and parent training programmes. Tarver et al. (2019) noted small intervention effects of parent-mediated behavioural interventions on hyperactivity (SMD=0.31, 95% CI [0.07, 0.56], Z=2.52, p=0.01)., while Tabatabaei et al. (2022) observed overall positive outcomes for these behaviours through parent training programmes. Harrop (2015), however, reported unclear effectiveness, because no intervention included within their review specifically targeted restricted and repetitive behaviours as a primary outcome.

"Adaptive behaviours" and daily skills for children with ASD

The impact of parenting interventions on the child's "adaptive behaviours", including skills for independent living, daily tasks, and community functioning, were reported in 12 systematic reviews. Nine systematic reviews reported overall effectiveness of a range of parenting interventions in improving adaptive behaviours (n=5), feeding and mealtime behaviours (n=2), and sleep problems (n=2). Rispoli et al. (2019) highlighted increased independence with daily tasks and improved self-help skills through home and school training programmes. Similarly, Hodges et al. (2023) found that 10 of 11 systematic reviews reported effective behavioural interventions for feeding outcomes. Mixed results were reported by Conrad et al. (2021) and Novak & Cusick (2006), particularly in parent- and clinician-rated adaptive behaviours. Oono et al. (2013) concluded that parenting interventions generally had unclear effects on adaptive behaviours, noting inconsistencies across systematic reviews. Reviews have also demonstrated the effectiveness of parent trainings for sleeping outcomes (e.g. Deb et al., 2020; Kirkpatrick et al., 2019). Kirkpatrick et al. (2019) found that among the 11 studies being reviewed, 9 reported a reduction in sleep problems, and the improvement in sleep was sustained during follow-up measures for trainings like behavioural treatment package (BTP). Deb et al. (2020) reported similar findings that parent training interventions have showed positive results in sleep patterns.

Cognitive and academic outcomes for children with ASD

Four systematic reviews addressed the impact of parenting interventions on cognitive and academic outcomes in children with ASD. Rispoli et al. (2019) observed improvements in pre-academic skills and postsecondary outcomes following school-based interventions that incorporated parental involvement. However, the effect of parenting interventions on the child's IQ remains unclear. McConachie & Diggle (2007) reported only one study with a significantly higher IQ post parent-mediated intervention, while Hernandez-Ruiz (2021) found no differences in IQ scores between parent-mediated intervention and control groups. While cognitive outcomes generally showed improvement, significant gains in IQ through parenting interventions remain uncertain.

Overall, parenting interventions for children with ASD demonstrated effectiveness across communication, social interaction, challenging behaviours, and adaptive skills, although outcomes varied depending on the targeted function. While interventions like Stepping Stones Triple P and parent-mediated programmes showed promise, further research is needed to clarify their impact on ASD symptom severity, emotional regulation, and restricted behaviours.

Attention deficit and hyperactivity disorder (ADHD)

Seventeen systematic reviews examined the impact of parenting interventions for carers of children with ADHD, of which 13 reported child-related outcomes. Most reviews addressed parent training programmes (n=8), followed by other interventions such as parent–child interaction therapy (n=2) and parenting-focused mindfulness and acceptance interventions (n=2).

Improvements in externalising behaviours, such as conduct problems (n=3) and behavioural problems (n=5), were consistently reported across systematic reviews. Coates et al. (2015) found a moderate reduction in both ADHD symptoms and conduct problems in children with or at risk of ADHD. Similarly, Doffer et al. (2023) demonstrated sustained reductions in disruptive behaviours following a range of parenting interventions. However, two systematic reviews reported mixed results for impact on externalising behaviours. Marquet-Doleac et al. (2024) reported improvements in parent-rated outcomes but not in teacher or clinician assessments as a result of behavioural parent training while Zwi (2011) found no significant improvements in externalising behaviours (SMD = −0.32, *n*=190, 95% CI [−0.83, 0.18], Z=1.26, p=0.21). For internalising problems, Zwi et al. (2011) found significant improvements in favour of parenting interventions compared with children in a control group (SMD = −0.48, 95% CI [−0.84, −0.13], n=142, Z=2.68, p=.01). In contrast, Leijten et al. (2018) reported no reduction in children's emotional problems following parent training programmes (b=.06, 95% CI [−.06, .18]), highlighting mixed effectiveness for internalising outcomes.

Only one systematic review (Marquet-Doleac et al., 2024), examined the impact of parenting interventions on social skills in children with ADHD, reporting improvements in parent-rated outcomes. This limited evidence underscores a gap in research on the effectiveness of parenting interventions for social skill development in children with ADHD.

Overall, parenting interventions for children with ADHD demonstrated effectiveness in reducing ADHD symptoms, conduct problems, and behavioural issues, though outcomes for externalising and internalising behaviours and social skills were less consistent. ADHD symptoms, including inattention and hyperactivity/impulsivity, improved with interventions such as behavioural intervention (e.g. Coates et al., 2015; Mulqueen et al., 2015), parent training (e.g. Lee et al., 2012; Leijten et al., 2018), and parent-focused mindfulness and acceptance interventions (e.g. Lee, 2022). For instance, Lee et al. (2022) reported significant reductions in ADHD symptoms following mindfulness and acceptance interventions, with effects maintained at follow-up. However, three systematic reviews, including Marquet-Doleac et al. (2024), noted mixed results, with improvements observed only in parent-rated outcomes but not in teacher- or clinician-rated assessments. Although interventions such as mindfulness and acceptance programmes and parenting training showed promise, variability in results across raters (e.g. parents vs teachers or clinicians) highlights the need for more comprehensive and consistent assessments of intervention effectiveness.

Intellectual disability

Ten reviews examined the impact of parenting interventions for children with intellectual disabilities; seven of those reported child-related outcomes.

Parent-implemented language-focused interventions positively impacted expressive and receptive language skills, with the largest effects seen in expressive morphosyntax (Roberts & Kaiser, 2011; g=0.82, 95% CI [0.37, 1.38]). However, two systematic reviews reported limited effects on language skills. Pennington et al. (2018) found no significant improvements as a result of a range of parenting interventions in communication skills, such as initiating conversation or joint attention, for children with non-progressive motor disorders, including intellectual disabilities and Down syndrome. Similarly, a review by O'Toole et al. (2018) on parent-mediated interventions for communication and language development in children with Down syndrome reported mixed results.

Regarding impact on social skills, behavioural skills training (BST) was found to be effective in improving social skills by training family caregivers to administer professional therapeutic techniques (Sun, 2022). Attachment-based and cognitive-behavioural parent-mediated interventions also effectively reduced externalising behaviours, including those related to social functioning, in children with intellectual disabilities (Kei et al., 2024).

The Stepping Stones Triple P programme demonstrated medium effect sizes in reducing behavioural and emotional problems in children with intellectual disabilities and Down syndrome (Tellegen & Sanders, 2013; d=0.54, 95% CI [0.37, 0.70], p<.001). Similarly, attachment-based and cognitive-behavioural interventions effectively reduced externalising behaviours in children with intellectual disabilities (Kei et al., 2024). Schaefer & Andzik (2021) reported mixed results for behavioural outcomes, including feeding measures and challenging behaviours, which were less significant compared with more focused interventions.

Parent-mediated sleep interventions proved effective, with 9 of 11 systematic reviews reporting reductions in sleep difficulties for children with intellectual disabilities and/or ASD (Kirkpatrick et al., 2019). These improvements were valued by parents and sustained after follow-up, underscoring the utility of these interventions for addressing sleep-related challenges.

Two additional systematic reviews specifically addressed Down syndrome. A review by Ward et al. (2020) of coaching practices in early interventions for developmental disabilities, including Down syndrome, noted poor or unreported effectiveness for language, communication, and motor skills. Similarly, O'Toole et al.(2018) observed limited improvements in communication and language skills, with targeted word usage not maintained post-intervention unless parents received extensive support.

Overall, parenting interventions for children with intellectual disabilities demonstrated effectiveness across language, social skills, sleep, and behavioural outcomes. Interventions such as Stepping Stones Triple P and behavioural sleep training showed significant promise. However, limited results in general parenting interventions and mixed findings for Down syndrome-specific outcomes highlight the importance of tailoring interventions to specific child needs to optimise their effectiveness.

Language disorders

Four reviews reported on outcomes for children with language disorders, all of which addressed the effectiveness of parent-implemented language intervention.

King & Xu (2021) highlighted caregiver coaching strategies that improved language acquisition in children with hearing loss and language delay. Roberts & Kaiser (2011) found parent-implemented interventions significantly enhanced receptive and expressive language (g=0.82, 95% CI [0.37, 1.38]), particularly expressive morphosyntax (g=0.35, 95% CI [0.05, 0.65]). Parent-implemented home-based therapy programmes for speech and language disorders were as effective as therapist-led approaches, improving speech and language measures (Tosh et al., 2017). The Lidcombe Program effectively reduced stuttering frequency in young children, emphasising the value of early intervention (Sjøstrand et al., 2021; g=0.39, 95% CI [0.15, 0.63], p=.001).

Overall, parenting interventions for children with language disorders, including home-based approaches such as the Lidcombe Program, showed consistent improvements in language acquisition, speech development, and fluency, highlighting the importance of early and targeted approaches.

Developmental delay

Four reviews examined parenting interventions for developmental delays, which addressed a range of parenting interventions, including parent-mediated communication and language intervention, parent training, parent participation approach, etc.

Parent-implemented interventions via telepractice improved social communication using naturalistic strategies, though not all systematic reviews found robust effects (Akemoglu et al., 2020). Language interventions enhanced vocabulary diversity and lexical density but showed no effect on vocabulary development (Te Kaat-van den Os et al., 2017). Parent-mediated programmes significantly reduced externalising behaviours, particularly with attachment-based and cognitive-behavioural approaches (Kei et al., 2024). The Triple P Positive Parenting programme improved parenting styles and reduced disruptive behaviours in children with developmental delays (de Graaf et al., 2008). Long-term benefits were greater for parents of boys due to higher levels of problem behaviour (de Graaf et al., 2008).

Overall, parenting interventions showed positive effects on communication and behaviour but highlighted variability in effectiveness, showing mixed effectiveness across language, communication, and behavioural outcomes.

Chronic medical conditions

Ten systematic reviews evaluated interventions for children with chronic medical conditions (as an umbrella term), focusing specifically on child outcomes such as health, behaviour, and quality of life.

Interactive media interventions, including serious games and educational tools, were assessed in one systematic review (Lohan et al., 2015). The findings indicated limited evidence for improving health outcomes in children with conditions such as asthma, diabetes, and cystic fibrosis. Although there were consistent positive trends, the quality of the included studies was generally poor, and improvements in disease management outcomes for children were inconsistent.

Psychological interventions such as cognitive behavioural therapy (CBT) and problem-solving skills training (PSST) were reported to improve specific child outcomes: CBT showed efficacy in reducing chronic pain, particularly in children with cancer or arthritis (Eccleston et al., 2015); PSST demonstrated significant improvements in child quality of life and reductions in mental health problems for children with traumatic brain injury and cancer, though findings varied across studies (Jackson et al., 2016).

Overall, interventions for children with chronic medical conditions demonstrated varying degrees of effectiveness across outcomes such as health, behaviour, and quality of life. Interventions like CBT and PSST showed promise in improving child-specific outcomes, particularly for conditions like chronic pain and cancer. However, inconsistencies in evidence highlight the need for more rigorous, well-designed studies to assess the long-term impact of interventions on child health and wellbeing.

Diabetes

Six systematic reviews assessed children with diabetes. The most-mentioned intervention was parent education programmes (n=3), followed by psychological interventions (Eccleston et al., 2015; Law et al., 2014) and empowerment-based interventions (Casagrande & Ingersoll, 2021). Two systematic reviews reported improvements in child outcomes from parenting interventions (Jackson et al., 2016; Mitchell et al., 2020). Improvements in child health-related quality of life (Mitchell et al., 2020) and better parent–child relationships (Jackson et al., 2016) were also observed. Lohan et al. (2015) reported mixed findings of parenting interventions on metabolic control, with some individual studies showing pre-to-post-intervention improvements, while others found no significant effects. Law et al. (2014) found no significant improvements in child mental health, behaviour, or medical symptoms after treatment. Eccleston et al. (2015) was unable to measure the effect of psychological interventions in diabetes. Overall, although some positive findings were noted, consistency across child outcomes for parenting interventions for diabetes was lacking.

Asthma

Four reviews included asthma in their assessments of chronic medical conditions. Another review primarily focused on the asthma population (Walter et al., 2016). Two reviews addressed psychological interventions (e.g. Law et al., 2014), and two others examined parent/family education programmes or parenting-focused mindfulness interventions (e.g. Mitchell et al., 2020). Parenting interventions showed mixed results. Two systematic reviews reported significant improvements in health-related quality of life for children in both intervention and comparison groups. For example, Walter et al. (2016) evaluated school-based family asthma education programmes, which led to significant improvements in daytime asthma symptoms, nighttime awakenings, and overall quality of life. However, Law et al. (2014) found no significant improvements in child mental health, behaviour, or medical symptoms post-treatment. Meanwhile, Eccleston et al. (2015) could not draw conclusions on the effectiveness of CBT for asthma. These findings highlight the potential of educational interventions to reduce asthma exacerbations; however, more evidence is needed.

Cancer

Three reviews evaluated the impact of parenting interventions on the psychological outcomes of children with cancer. Two of the reviews addressed the effectiveness of psychological interventions (e.g. Law, 2014), and the other review looked into empowerment-based interventions (Casagrande & Ingersoll, 2021). Nurhidayah et al. (2023) focused on empowerment-based interventions in paediatric oncology, reporting improved quality of life and reduced gastrointestinal issues during chemotherapy, emphasising the potential of targeted interventions for symptom management. Additionally, Eccleston et al. (2015) reported that children with chronic medical conditions, including cancer, experienced reduced painful conditions following parent-included psychological interventions, such as family therapy. However, Law et al. (2014) found no significant improvements in child mental health, behaviour, or medical symptoms after parent- and family-based interventions.

Other chronic medical conditions

Other chronic medical conditions included congenital heart disease, chronic pain, atopic dermatitis/eczema, skin diseases, gynaecological disorders, inflammatory bowel disease, and cystic fibrosis.

Four reviews included congenital heart disease, with one exclusively focused on the condition. Parent education programmes improved family functioning, communication, and mental health, while enhancing parent–infant bonding and neurodevelopmental outcomes during ICU admissions

(Kasparian et al., 2019). Mitchell et al. (2020) reported positive effects on child health-related quality of life, while Law (2014) found no significant improvements in child mental health, behaviour, or medical symptoms.

Two reviews addressed chronic pain. Law et al. (2014) found no significant improvements in child mental health, behaviour, or medical symptoms. Eccleston et al. (2015), however, reported that psychological interventions effectively reduced painful conditions post-treatment.

Two reviews found positive outcomes for children with atopic dermatitis/eczema. Parenting interventions improved child health-related quality of life over time (Mitchell et al., 2020). Zhao et al. (2020) reported significant reductions in SCORAD scores, reflecting decreased eczema severity, following therapeutic education programmes (SMD = −8.22, 95% CI [−11.29, −5.15], p<.001).

One review (Eccleston et al., 2015) examined skin diseases, gynaecological disorders, and inflammatory bowel disease but found that CBT was effective only in reducing chronic pain. Other conditions showed inconsistent outcomes due to poor reporting and lack of clear primary objectives.

No review focused exclusively on cystic fibrosis, but three reviews included it within broader chronic medical conditions (Jackson et al., 2016; Law et al., 2014; Mitchell et al., 2020). Parent education programmes improved family functioning, communication, and problem-solving skills, along with better parent–child relationships and perceptions of child health (Jackson et al., 2016). Mitchell et al. (2020) found parenting interventions positively influenced child health-related quality of life. Conversely, Law et al. (2014) found no significant improvements in child mental health, behaviour, or medical symptoms.

Overall, parenting interventions for chronic medical conditions demonstrated mixed effectiveness across conditions. Although some programmes, such as those targeting asthma, diabetes, and eczema, showed positive impacts on child outcomes, others, including cancer and chronic pain, revealed limited or inconsistent results. Tailored approaches with clearer objectives are needed to maximise benefits for specific chronic conditions.

Physical disabilities

Cerebral palsy

Seven reviews assessed a range of parenting interventions for children with cerebral palsy. Two studies examined mindfulness and acceptance interventions (e.g. Wright et al., 2023), and other studies looked into parenting interventions such as parenting skills training programmes (Whittingham et al., 2011) and environmental enrichment interventions (Morgan et al., 2013).

Enriched environment interventions led to minor improvements in children's motor function when compared with standard care (Morgan et al., 2013; SMD=0.39, 95% CI [0.05, 0.72], I^2=3%, p=.02). Interaction training enhanced child responsiveness to parental interactions but had no effect on independent play (Pennington et al., 2004). Parent-mediated interventions improved conversational skills, including joint attention and initiation behaviours (Whittingham et al., 2011). However, when examining a home-based family-centred practice in which parents implemented the intervention in collaboration with the therapist, inconsistent effects on motor function were found (Novak & Cusick, 2006). Parent-mediated communication interventions also failed to show significant improvements in joint attention or conversation initiation (Pennington et al., 2018). The Stepping Stones Triple P programme (SSTP) demonstrated promising results in reducing behavioural and emotional difficulties in children with cerebral palsy, with a medium effect size (Tellegen & Sanders, 2013; d=0.54, 95% CI [0.37, 0.70], p<.001). Overall, the effectiveness of interventions varied, with some demonstrating mixed efficacy and others (e.g. SSTP) showing more consistent positive results.

Hearing loss/impairment

Two systematic reviews examined parenting interventions for children with hearing loss, focusing on the impact of interventions on language and communication outcomes. Caregiver coaching strategies for children aged 6 to 46 months with hearing loss showed positive effects on language acquisition through triadic interactions (King & Xu, 2021). Colombani et al. (2023) highlighted the potential of gesture-oriented parent–child early interventions (PCEI) for improving language and non-verbal communication skills, especially in children with congenital sensorineural hearing loss (cSNHL) from deprived or atypical backgrounds. These findings underscore the potential of tailored parenting interventions in enhancing language and communication outcomes for children with hearing loss.

Other types of physical disabilities

Two systematic reviews analysed interventions for children with traumatic brain injury. Law et al. (2014) found no significant improvements in mental health, behaviour, or medical symptoms. However, Shen et al. (2023) reported small-to-medium positive effects of family-oriented interventions on child cognition, emotion, and behaviour, highlighting their potential benefits (g=0.43, SE=0.15, t=2.86, p=.014, 95% CI [0.11, 0.76], n=1,145).

One systematic review examined parent-mediated communication interventions for preschool children with non-progressive motor disorders, including children with “chromosomal abnormalities” (Pennington et al., 2018). The results showed no evidence of improvement in children’s conversation initiations or joint attention post-intervention (Pennington et al., 2018).

A single systematic review assessed parent-mediated programmes for children with developmental disabilities and externalising disorders, including “foetal alcohol syndrome” (now generally referred to as “foetal alcohol spectrum disorder”). The interventions significantly reduced externalising behaviours, particularly in groups receiving attachment-based and cognitive-behavioural approaches (Kei et al., 2024).

One systematic review analysed telehealth caregiver training for implementing applied behavioural analysis-based interventions for parents of children with Rett syndrome, lissencephaly, and other disabilities (Unholz-Bowden et al., 2020). Results showed positive outcomes in reducing “problem behaviours” and increasing skill acquisition, although some included studies reported that participants showed mixed improvements (Unholz-Bowden et al., 2020).

Overall, parenting interventions for children with physical disabilities and related conditions showed varying degrees of success. Although interventions like SSTP and family-oriented programmes demonstrated effectiveness in managing behavioural issues, outcomes for motor and communication skills were mixed or inconclusive. Telehealth-based interventions and early gesture-oriented programmes offer promise for addressing specific challenges in children with hearing loss, Rett syndrome, and lissencephaly.

Unspecified disabilities

Three systematic reviews examined interventions for children with unspecified disabilities (i.e. disabilities in various aspects, including intellectual, physical, and sensory disabilities). Evaluated interventions included parent education (Jang et al. 2023), parenting-focused family interventions (McCarthy, 2022), and behavioural interventions (Tellegen & Sanders, 2013; d=0.54, 95% CI [0.37, 0.70], p<.001).

Jang et al. (2023) found parental education highly effective for child development, particularly when delivered face to face, improving outcomes for children with cognitive, verbal, and physical disabilities. McCarthy & Guerin (2022) highlighted family-centred early interventions as consistently yielding positive outcomes in social, functional, motor, and communication development for children with unspecified disabilities. Similarly, the SSTP demonstrated medium-sized effects in reducing behavioural and emotional problems in children with disabilities, further supporting its effectiveness (Tellegen & Sanders, 2013; d=0.54, 95% CI [0.37, 0.70], p<.001).

Parenting interventions for children with unspecified disabilities, including SSTP, family-centred care, and parental education, showed a significant impact across a range of developmental and behavioural outcomes in children. Digital interventions also demonstrated potential for enhancing child communication behaviours, though further research is needed to validate these effects.

Children with special healthcare needs

Two systematic reviews examined parenting interventions for children with special healthcare needs. Jackson (2016) reviewed parent education programmes, noting significant improvements in family functioning, including better mental health, parenting competencies, communication, and problem-solving skills. These programmes also enhanced relationships between parents, children, and siblings, with parents perceiving their children as less sick. Mirza et al. (2018) focused on activation interventions for parents, which led to positive psychosocial and school-based outcomes. Although one study found no significant improvements in the child's level of depression, anxiety, or self-esteem, it observed better psychosocial adjustment, particularly in children with low self-esteem. Other systematic reviews highlighted improvements in children's psychological status and functioning.

Parenting interventions for children with special healthcare needs demonstrated positive effects on psychosocial adjustment and family functioning. Parent education and activation programmes enhanced both child and family outcomes, with particular benefits observed in communication, problem-solving skills, and emotional wellbeing.

Effectiveness of interventions for parenting outcomes

Out of the 106 systematic reviews, 86 assessed the effectiveness of parenting interventions on parenting outcomes (see Appendix B4 Table 4 'Parenting outcomes reported by the 106 systematic reviews included in the umbrella review'). This section will first look at the effectiveness of parenting interventions on parenting outcomes, categorised by the type of child disability to align with the structure used in the previous section on child outcomes. It will then group the same set of systematic reviews by the type of parenting outcomes they address, which were reported in relation to five key domains: parent knowledge and understanding, parenting practices, parent–child interaction, parenting stress, and parenting efficacy.

Developmental disabilities

Twenty systematic reviews were analysed to evaluate the effectiveness of parenting interventions on parenting outcomes for families of children with developmental disabilities. The interventions included behavioural training, psychoeducation, stress management programmes, and parent–child interaction approaches. Outcomes assessed across the reviews included parental stress, self-efficacy, parenting practices, parent–child interaction, knowledge and advocacy, and intervention fidelity. Overall, most interventions showed positive effects, although mixed findings were noted in some reviews.

Parental stress was examined in eight reviews (Carr et al., 2017; Kei et al., 2024; Lindo et al., 2016; Petcharat et al., 2017; Ragni et al., 2022; Hernandez-Ruiz, 2021; Lang et al., 2009; Unholz-Bowden et al., 2020). Parent Plus programmes (Carr et al., 2017) demonstrated significant reductions in parental stress for families of children with clinically significant problems, including developmental disabilities. Stress management interventions were particularly effective, with Lindo et al. (2016) reporting strong reductions in parental stress and Petcharat et al. (2017) observing a statistically significant reduction. However, Ragni et al. (2022) found mixed results, with two of four studies reporting significant reductions in stress while the remaining two showed no significant changes. Hernandez-Ruiz (2021) noted that music-based interventions improved parental stress through enhanced relationships and positive interactions. Lang et al. (2009) highlighted stress reductions as a by-product of high-fidelity intervention implementation.

Parenting practices and self-efficacy were addressed in six reviews (Fang et al., 2023; Ruane & Carr, 2019; Te Kaat-van den Os et al., 2017; Tellegen & Sanders, 2013; Vargas Londono et al., 2023; Roberts & Kaiser, 2011). Fang et al. (2023) reported medium effect sizes for interventions targeting parenting practices and self-efficacy, with better outcomes than general parenting programmes for non-disabled populations. Ruane et al. (2019) observed significant improvements in parenting style and satisfaction (d=0.70 and 0.44, respectively), while Vargas Londono et al. (2023) reported moderate increases in positive parenting practices (k=9, Hedges' g=0.45, SE=0.08, 95% CI [0.23, 0.67], p<.05) and reductions in negative behaviours (k=5, Hedges' g=0.50, SE=0.12, 95% CI [−0.39, 1.41], p<.05). Te Kaat-van den Os et al. (2017) and Tellegen & Sanders (2013; d=0.73, 95% CI [0.55, 0.90], p<.001) identified positive effects on parental responsiveness and parenting style, with Tellegen & Sanders (2013) reporting a large effect size. Roberts & Kaiser (2011) noted significant improvements in parent–child interaction, particularly in responsiveness and communication (g=0.73, p<.001, 95% CI [0.26, 1.20]).

Knowledge and advocacy were discussed in three reviews (Casagrande & Ingersoll, 2021; Rios & Burke, 2021; Carr et al., 2017). Casagrande & Ingersoll (2021) highlighted consistent improvements in knowledge and advocacy-related attitudes across studies but noted inconsistent findings for behavioural change. Rios & Burke (2021) observed significant gains in knowledge and advocacy skills and improvements in access to services in three studies.

Intervention fidelity was assessed in three reviews (Lang et al., 2009; Unholz-Bowden et al., 2020; Carr et al., 2017). Lang et al. (2009) reported high fidelity rates among caregivers implementing pivotal response training, with sustained improvements in parent–child communication. Unholz-Bowden et al. (2020) found that caregivers exhibited improved performance in implementing applied behaviour analysis-based procedures, though one study reported mixed results.

Neurodevelopmental disorders

Five systematic reviews were analysed to assess the effectiveness of parenting interventions on parenting outcomes for families of children with neurodevelopmental disorders. These interventions targeted outcomes such as parenting stress, self-efficacy, parent–child relationships, and the implementation of behaviour strategies. The findings consistently demonstrated positive effects on parenting outcomes.

Parental stress was a central focus in three reviews (Golfenshtein et al., 2016; Provenzi et al., 2020; Tan-MacNeill et al., 2021). Golfenshtein et al. (2016) reported reductions in stress across 23 studies, with multicomponent interventions showing the strongest effects (n=8/9). Provenzi et al. (2020) observed reductions in parenting stress and improvements in self-efficacy using the video-feedback intervention (VFI). Similarly, Tan-MacNeill et al. (2021) reported reductions in stress across all nine interventions reviewed, alongside gains in knowledge and self-efficacy.

Parent–child relationships and interactive behaviour were discussed in four reviews (Provenzi et al., 2020; Hernandez-Ruiz, 2021; Tan-MacNeill et al., 2021; Golfenshtein et al., 2016). Provenzi et al. (2020) found significant improvements in turn-taking, reciprocity, and responsiveness, as well as reductions in intrusive and hostile behaviours. Hernandez-Ruiz (2021) noted enhancements in parent–child interactions through music-based interventions. Golfenshtein et al. (2016) highlighted improved relationships in multicomponent programmes.

Implementation fidelity was assessed in Unholz-Bowden et al. (2020), which reported consistent improvements in caregivers' performance with applied behaviour analysis-based procedures. However, one study noted a decline in performance for 1 out of 7 procedures during post-training (Unholz-Bowden et al., 2020).

Overall, the reviews underscore the effectiveness of parenting interventions for neurodevelopmental disorders in reducing stress, enhancing self-efficacy, and fostering positive parent–child relationships.

ASD

Thirty-six systematic reviews were analysed to evaluate the effectiveness of parenting interventions on parenting outcomes for families of children with ASD. These interventions included telepractice programmes, parent training, psychoeducation, mindfulness-based approaches, and applied behaviour analysis. The reviews focused on various outcomes, including parental stress, knowledge, self-efficacy, parenting competence, parent–child interaction, and intervention fidelity. Most reviews reported positive effects, though some identified mixed or non-significant findings.

Parental stress was a primary outcome in 15 reviews (Beaudoin et al., 2014; Deb et al., 2020; Kei et al., 2024; Kulasinghe et al., 2023; Li et al., 2024; MacKenzie et al., 2022; Oono et al., 2013; Pan et al., 2023; Rutherford et al., 2019; Tabatabaei et al., 2022; Tarver et al., 2019; Gerow et al., 2018; Golfenshtein et al., 2016; Patterson et al., 2012; Wright et al., 2023). Beaudoin et al. (2014) observed significant reductions in parental stress following parent training interventions, with a notable decrease on the Parenting Stress Index – Short Form. Similarly, Kei et al. (2024) and Li et al. (2024) reported small but significant reductions in stress, and Oono et al. (2013) found a 0.17 standard deviation decrease in stress levels for intervention groups. Pan (2023) noted that telehealth interventions significantly reduced parental stress, though high heterogeneity was observed ($p=.02$, 95% CI [−1.23, −0.10], $I^2=85\%$). MacKenzie & Eack (2022) found a small but non-significant effect on stress, highlighting the limitations of existing interventions for addressing psychological outcomes. Deb et al. (2020) reported improvements in stress across interventions, but variability in methodology and the potential placebo effect made it difficult to draw definitive conclusions. Kulasinghe et al. (2023) observed moderate reductions in stress but noted challenges in identifying specific effective components due to heterogeneity.

Parenting knowledge was a key focus in 10 reviews (Casagrande & Ingersoll, 2021; Deb et al., 2020; McConachie et al., 2007; O'Donovan et al., 2019; Parsons et al., 2017; Tabatabaei et al., 2022; Wright et al., 2023; Yosep et al., 2022; Rojas-Torres et al., 2020; Akemoglu et al., 2020). Casagrande & Ingersoll (2021) found consistent improvements in knowledge across interventions, though behavioural changes were inconsistently measured. McConachie & Diggle (2007) observed significant gains in knowledge about ASD and related teaching strategies, while Parsons et al. (2017) reported significant increases in knowledge in all six studies reviewed. Tabatabaei et al. (2022) and Yosep et al. (2022) highlighted increased parental knowledge and awareness of ASD, and Akemoglu et al. (2020) demonstrated that telepractice interventions improved parents' ability to use communication teaching strategies effectively. Rojas-Torres et al. (2020) and O'Donovan et al. (2019) noted enhanced understanding of ASD management techniques and improved parent skills.

Parenting competence and self-efficacy were addressed in six reviews (Deb et al., 2020; Kulasinghe et al., 2023; MacKenzie & Eack, 2022; Pan et al., 2023; Rutherford et al., 2019; Wright et al., 2023). Pan et al. (2023) identified significant improvements in self-efficacy in telehealth groups compared with controls ($p=.005$, 95% CI [0.11, 0.63]), $I^2=0\%$), while Wright et al. (2023) observed small but significant improvements in parenting self-efficacy post-intervention (SMD = −0.38, 95% CI [−0.09, 0.84]). Rutherford et al. (2019) noted reductions in stress and improvements in satisfaction, and MacKenzie & Eack (2022) reported marked improvements in parenting confidence.

Parent–child interactions and responsiveness were evaluated in 11 reviews (Akemoglu et al., 2020; Heidlage et al., 2020; Kulasinghe et al., 2023; Lang et al., 2009; McConachie &Diggle, 2007; Meadan et al., 2009; Oono et al., 2013; Roberts et al., 2011; Rojas-Torres et al., 2020; Tellegen & Sanders, 2013; Vargas Londono et al., 2023). Akemoglu et al. (2020) found that telepractice interventions increased parent use of strategies to enhance children's social communication skills, while Heidlage et al. (2020) noted increased contingent responsiveness ($g=1.28$, 95% CI [0.49–2.06]), though findings were based on limited studies. Lang et al. (2009) reported high fidelity of pivotal response training implementation and generalisation of skills to siblings. Meadan et al. (2009) demonstrated that parents successfully implemented modelling and responsive interaction strategies in natural environments, leading to improved engagement. Roberts & Kaiser (2011) observed significant improvements in parent responsiveness and communication (g=0.73, p<.001, 95% CI [0.26, 1.20]), and Oono et al. (2013) reported higher parent synchrony in intervention groups. Kulasinghe et al. (2023) noted large effects on parent responsiveness but reported low certainty of evidence.

Overall, the systematic reviews demonstrate that parenting interventions for families of children with ASD are broadly effective in improving parental stress, knowledge, self-efficacy, parent–child interactions, and intervention fidelity. However, findings such as those in Deb et al. (2020) and Kulasinghe et al. (2023) highlight variability in methodology and outcomes, underscoring the need for more robust and consistent research to refine intervention approaches.

ADHD

Seventeen systematic reviews were analysed to assess the effectiveness of parenting interventions on parenting outcomes for families of children with ADHD. These interventions included behavioural parent training, psychoeducation, mindfulness-based approaches, and parent management training. Key outcomes evaluated included parental stress, parenting competence, parent–child relationship quality, parenting behaviours, and knowledge. Although most reviews reported positive effects, some mixed and non-significant findings were also identified.

Parental stress was a commonly assessed outcome in seven reviews (Carr et al., 2017; Coates et al., 2015; Colalillo & Johnston, 2016; Lee et al., 2022; Petcharat & Liehr, 2017; Phillips et al., 2024; Zwi et al., 2011). Parent Plus programmes (Carr et al., 2017) were found to significantly reduce stress for parents of children with ADHD. Coates et al. (2015) reported moderate reductions in stress from parent-administered behaviour interventions, and Colalillo & Johnston (2016) highlighted both short- and long-term reductions in stress following parent management training. Lee et al. (2022) observed small-to-large reductions in stress with mindfulness-based parent training, maintained at follow-up. Petcharat &Liehr (2017) reported stress reductions from pre- to follow-up assessments. Conversely, Zwi et al. (2011) found no statistically significant differences in parental stress for the Parent Domain (PD) of the Parenting Stress Index (PSI) between parent training and control groups (MD = −7.54, 95% CI [−24.38, 9.30], z=0.88, p=.38), though the Child Domain (CD) scores significantly favoured the intervention group (MD = −10.52, 95% CI [−20.55, −0.48], z=2.05, p=.04).

Parenting competence was a primary outcome in five reviews (Colalillo & Johnston, 2016; Dekkers et al., 2022; Doffer et al., 2023; Lee et al., 2012; Marquet-Doleac et al., 2024). Colalillo & Johnston (2016) reported significant improvements in parenting competence with short- and long-term benefits from parent management training. Lee et al. (2012) found a large initial effect on parenting competence, which decreased to moderate at follow-up. Dekkers et al. (2022) and Doffer et al. (2023) also identified improvements in parenting sense of competence, though Doffer et al. (2023) noted no significant long-term effects for negative parenting. Marquet-Doleac et al. (2024) demonstrated significant gains in parental efficacy, stress reduction, and parenting skills, with improvements in parent–child interactions in two RCTs.

Parenting behaviours and the parent–child relationship were evaluated in 10 reviews (Dekkers et al., 2022; Doffer et al., 2023; Leijten et al., 2018; Marquet-Doleac et al., 2024; Phillips et al., 2024; Rimestad et al., 2019; Zwi et al., 2011; Casagrande & Ingersoll, 2021; Hornstra et al., 2023; Coates et al., 2015). Dekkers et al. (2022) found that behavioural techniques focusing on antecedents and positive reinforcement improved parenting behaviours and sense of competence. However, higher doses of psychoeducation were associated with lower effects on positive parenting. Leijten et al. (2018) identified significant reductions in harsh parenting practices, such as corporal punishment (b=.22, 95% CI [−.42, −.01]) and shouting (b=.31, 95% CI [−.61, −.01]), and increases in positive parenting behaviours, such as praise. Phillips et al. (2024) found significant aggregate effect sizes for observational measures of positive parenting behaviours (g=2.15, 95% CI [1.79, 2.50], p<.001). Rimestad et al. (2019) found moderate to large reductions in negative parenting (0.63, 95% CI [0.32, 0.93], p<.001). Hornstra et al. (2023) highlighted that higher doses of behavioural techniques focusing on negative consequences improved treatment effects on behavioural problems, while Casagrande & Ingersoll (2021) found improvements in parental knowledge and attitudes, though behavioural changes were inconsistent. Coates et al. (2015) reported positive impacts on parent behaviour and reductions in ADHD symptoms and conduct problems. Zwi et al. (2011) noted no significant changes in parenting skills compared with control groups (MD = −7.54, 95% CI [−24.38, 9.30], z=0.88, p=.38).

Knowledge and advocacy were assessed in two reviews (Casagrande & Ingersoll, 2021; Phillips et al., 2024). Casagrande & Ingersoll (2021) found improvements in parental knowledge regarding ADHD treatment and advocacy strategies. Phillips et al. (2024) identified significant improvements in parental education.

Fidelity of intervention implementation was specifically discussed in Carr et al. (2017), where Parent Plus programmes were found to achieve high fidelity across settings, and in Phillips et al. (2024), which reported heterogeneous effect sizes for intervention fidelity and behaviour outcomes.

Overall, the reviews indicate that parenting interventions for ADHD are effective in reducing stress, improving parenting competence, enhancing parent–child relationships, and increasing positive parenting behaviours. However, findings such as those in Zwi et al. (2011) highlight variability in stress and skill-based outcomes, underscoring the need for further research to optimise intervention strategies and delivery.

Intellectual disability

Eight systematic reviews were analysed to evaluate the effectiveness of parenting interventions on parenting outcomes for families of children with intellectual disabilities. The interventions focused on improving parental stress, parenting self-efficacy, parent–child interactions, and behavioural outcomes. Overall, the findings demonstrated predominantly positive effects.

Parental stress was addressed in three reviews (Golfenshtein et al., 2016; Kei et al., 2024; Rios, 2021). Golfenshtein (2016) reported reductions in stress across 23 studies, with multicomponent interventions showing the strongest effects (n=8/9). Kei et al. (2024) observed a small but significant reduction in parental stress through sensitivity analysis. Rios & Burke (2021) highlighted that parents showed improved stress management alongside gains in knowledge and advocacy skills.

Parent–child interaction and responsiveness were examined in two reviews (Roberts & Kaiser 2011; Lang, 2009). Roberts (2011) found significant improvements in parent–child interaction, particularly in responsiveness, use of language models, and communication rates (g=0.73, p<.001, 95% CI [0.26, 1.20]). Lang et al. (2009) reported that caregivers maintained high fidelity in implementing pivotal response training, which enhanced child communication and facilitated skill generalisation to other siblings.

Parenting skills, self-efficacy, and behaviour outcomes were discussed in three reviews (Schaefer et al., 2021; Tellegen & Sanders, 2013; Wright et al., 2023). Tellegen & Sanders (2013) observed a large effect size for improvements in parenting style across Stepping Stones Triple P programmes (SMD=0.33, 95% CI [−0.17, 0.95], z=1.38, p=.17). Schaefer & Andzick (2021) reported consistent improvements in parenting behaviour across 102 of 110 cases, indicating strong evidence for behaviour skills training (BST). Wright et al. (2023) found small but significant improvements in parenting self-efficacy and confidence at post-intervention (SMD = −0.38, 95% CI [−0.09, 0.84]).

Five systematic reviews evaluated parenting interventions specifically for families of children with Down syndrome. The interventions focused on parental stress, and parent–child interactions, with mixed results. Parental stress was examined in three reviews (Golfenshtein et al., 2016; Petcharat & Liehr, 2017; Ward et al., 2020). Golfenshtein et al. (2016) reported significant reductions in stress in most interventions, while Petcharat & Liehr (2017) observed a moderate effect size for reductions in stress from pre- to follow-up. However, Ward (2020) noted poor reporting of the effectiveness of coaching interventions in reducing stress, with no actual results provided. Parent–child interactions were discussed in two reviews (O'Toole et al., 2018; Tellegen & Sanders, 2013). O'Toole et al. (2018) reported significant improvements in parenting behaviours such as "talkativeness" and "labelling" following interventions but found no significant reductions in stress. Tellegen & Sanders (2013) observed a large effect size for improvements in parenting style across Stepping Stones Triple P programmes (SMD=0.33, 95% CI [−0.17, 0.95], z=1.38, p=.17).

Language disorders

Three systematic reviews were analysed to assess the effectiveness of parenting interventions on parenting outcomes for children with language disorders. The interventions targeted parent–child interactions and parental satisfaction. Results were generally positive but varied in some aspects.

Parent–child interaction and responsiveness were evaluated in two reviews (Roberts, 2011; Heidlage et al., 2020). Roberts & Kaiser (2011) found significant improvements in interaction styles, including responsiveness and communication (g=0.73, p<.001, 95% CI [0.26, 1.20]). Heidlage et al. (2020) reported increases in contingent responsiveness, a key language-facilitating behaviour (g=1.28, 95% CI [0.49–2.06]), but noted that the findings were based on limited data, with only five studies measuring this construct.

Parental satisfaction and perceptions were addressed in Tosh et al. (2017). Parents expressed a strong preference for home-based programmes over traditional therapy services, highlighting the accessibility and convenience of home visits. The review noted favourable parental perceptions of these interventions, suggesting they enhanced overall satisfaction with services.

Overall, these findings indicate that parenting interventions for children with language disorders effectively improve parent–child interactions and parental satisfaction, though additional research is needed to address gaps in evidence for language-facilitating strategies.

Developmental delay

Five systematic reviews were analysed to evaluate the effectiveness of parenting interventions for families of children with developmental delay. The interventions included telepractice programmes, music-based approaches, and coaching techniques, targeting parental stress, parent–child interactions, and responsiveness. The findings were predominantly positive, with some mixed results.

Parental stress was addressed in two reviews (Kei et al., 2024; Ward, 2020). Kei et al. (2024) reported a small but statistically significant reduction in stress following interventions targeting developmental delay. Ward et al. (2020), however, noted poor or incomplete reporting of the effectiveness of coaching interventions in reducing stress or improving parental competence, with no specific results provided.

Parent–child interactions and responsiveness were discussed in three reviews (Akemoglu et al., 2020; Hernandez-Ruiz, 2021; Te Kaat-van den Os et al., 2017). Akemoglu et al. (2020) highlighted the benefits of telepractice programmes in improving parents' use of communication teaching strategies, such as time delay, which enhanced children's social communication skills. Hernandez-Ruiz (2021) reported improvements in parental responsiveness and parent–child interactions through music-based interventions, while Te Kaat-van den Os et al. (2017) observed positive effects on parental responsiveness and interaction behaviours following structured parenting programmes. Parental competence and knowledge were briefly addressed in Ward et al. (2020), which noted the lack of adequate reporting of these outcomes in studies assessing coaching interventions.

Overall, the findings suggest that parenting interventions for developmental delay are effective in improving parental responsiveness and parent–child interactions, although reporting inconsistencies limit conclusions regarding stress and competence outcomes.

Chronic medical conditions

Twelve systematic reviews were analysed to evaluate the effectiveness of parenting interventions on parenting outcomes for families of children with chronic medical conditions. These interventions included acceptance and commitment therapy (ACT), problem-solving skills training (PSST), internet-based family empowerment programmes, and psychological interventions targeting parenting behaviour, knowledge and empowerment, self-efficacy, and parent–child relationships. Overall, the findings demonstrated positive effects, though some reviews reported variability or mixed results.

Parental knowledge and empowerment were discussed in four reviews (Annaim et al., 2015; Mulyana et al., 2023; Mitchell et al., 2020; Golfenshtein et al., 2016). Annaim et al. (2015) found limited but positive evidence supporting the use of interactive media to educate parents, noting consistent improvements despite limited supporting data. Mulyana et al. (2023) highlighted the efficacy of internet-based family empowerment interventions, reporting improvements in knowledge, resource availability, time management, and self-confidence. Mitchell et al. (2020) noted significant intervention effects on self-efficacy for managing illness-related behaviours, particularly for conditions such as eczema, but reported no effects on observational measures of parenting behaviour. Golfenshtein et al. (2016) observed significant improvements in parental knowledge and empowerment through multicomponent interventions.

Parental stress and psychological flexibility were evaluated in four reviews (Golfenshtein et al., 2016; Jin et al., 2021; Ruskin et al., 2021; Mitchell et al., 2020). Golfenshtein et al. (2016) reported reductions in stress for most interventions, with the strongest effects seen in multicomponent programmes (n=8/9). Jin et al. (2021) found that ACT significantly improved psychological flexibility and reduced dysfunctional parenting behaviours compared with usual care or waitlists. Ruskin et al. (2021) reported improvements in psychological flexibility and mindfulness in 70% of studies, though significant variability in intervention outcomes was noted. Mitchell et al. (2020) observed small but significant effects on stress regulation within specific parent groups, such as mothers managing chronic illness in children.

Parenting behaviour and problem-solving skills were a focus in six reviews (Eccleston et al., 2015; Law et al., 2014; Zhou et al., 2024; Golfenshtein et al., 2016; Jackson et al., 2016; Wright et al., 2023). Eccleston et al. (2015) found that problem-solving therapy (PST) improved problem-solving skills for parents managing chronic illness. Zhou et al. (2024) demonstrated significant effects of PSST on problem-solving skills across 12 studies (SMD=0.43, n=1,887, k=12, 95% CI [0.27, 0.58]). Law et al. (2014) reported small but significant improvements in parent behaviour following family-based psychological interventions. Jackson et al. (2016) identified positive gains in parenting competencies, as measured by the Parenting Sense of Competence Scale (PSOC). Wright et al. (2023) found small but significant improvements in parenting self-efficacy and confidence post-intervention (SMD = −0.38, 95% CI [−0.09, 0.84]).

The parent–child relationship and emotional regulation were discussed in two reviews (Ruskin et al., 2021; Mitchell et al., 2020). Ruskin et al. (2021) noted significant improvements in mindfulness and acceptance of children’s symptoms or distressing experiences in 70% of studies, alongside better parent–child interactions and protective parenting behaviours. Mitchell et al. (2020) found that psychological interventions enhanced parents’ confidence in managing relational dynamics but highlighted gaps in observational evidence.

Two reviews (Annaim, et al. 2015; Ruskin et al., 2021) presented mixed or unclear findings. Annaim et al. (2015) found limited evidence for the effectiveness of interactive media, though positive outcomes were consistently noted. Ruskin et al. (2021) highlighted variability across mindfulness and acceptance interventions, with additional outcome measures yielding inconsistent results.

Diabetes

Six systematic reviews evaluated the effectiveness of parenting interventions on parenting outcomes for families of children with diabetes. The interventions focused on improving parental knowledge, behaviour, self-efficacy, and competencies in managing diabetes and related parenting practices. Overall, the findings indicated positive effects, though there were occasional limitations in specific outcome measures.

Parental knowledge and advocacy were discussed in two reviews (Casagrande & Ingersoll, 2021; Lohan et al., 2015). Casagrande & Ingersoll (2021) reported consistent improvements in parental knowledge and attitudes across multiple studies, though behavioural change and service access improvements were inconsistently reported. Lohan et al. (2015) highlighted improvements in responsibility sharing and parental cooperation in diabetes management but noted that diabetes knowledge was assessed in only one study, which found no significant differences between treatment and control groups.

Parenting behaviour was addressed in three reviews (Eccleston et al., 2015; Law et al., 2014; Lohan et al., 2015). Eccleston et al. (2015) demonstrated that problem-solving therapy (PST) significantly improved problem-solving skills among parents of children with diabetes. Law et al. (2014) reported small but significant improvements in parent behaviour following family-based psychological interventions. Lohan et al. (2015) also identified positive effects on parenting behaviour related to diabetes management.

Parenting competencies and self-efficacy were examined in two reviews (Jackson et al., 2016; Mitchell et al., 2020). Jackson et al. (2016) found improvements in parenting competencies, such as feelings about being a parent, measured using the Parenting Sense of Competence Scale (PSOC). Mitchell et al. (2020) reported significant intervention effects on self-efficacy for managing children’s illness-related behaviours and parental confidence, though no significant effects were found in observational measures of parenting behaviour.

Overall, the findings suggest that parenting interventions for diabetes are effective in improving parental behaviour, knowledge, self-efficacy, and competencies, though further exploration of observational outcomes may provide a more comprehensive understanding of intervention effectiveness.

Asthma

Five systematic reviews evaluated the effectiveness of parenting interventions on parenting outcomes for families of children with asthma, focusing on parental knowledge, self-efficacy, and parenting behaviour. The interventions demonstrated overall positive outcomes in these areas.

Parental knowledge and advocacy were discussed in one review (Casagrande & Ingersoll, 2021), which reported consistent improvements in parental knowledge and attitudes. However, behavioural change and service access improvements were inconsistently measured across studies, leading to variable findings in these areas.

Parenting behaviour was addressed in three reviews (Eccleston et al., 2015; Law et al., 2014; Mitchell et al., 2020). Eccleston et al. (2015) highlighted that problem-solving therapy effectively enhanced problem-solving skills in parents of children with asthma. Law et al. (2014) observed small but significant improvements in parent behaviour following psychological interventions. Mitchell et al. (2020) reported significant intervention effects on self-efficacy for managing asthma-related behaviours and parent-reported measures of parenting behaviour, though no effects were observed on observational measures.

Parenting self-efficacy and confidence were examined in one review (Wright et al., 2023). Wright et al. (2023) identified small but significant improvements in parenting self-efficacy and confidence at post-intervention (SMD = −0.38, 95% CI [−0.09, 0.84]), with consistent effects observed when combining post-intervention and follow-up time points (SMD=0.34, 95% CI [0.06, 0.62]).

Overall, parenting interventions for asthma were found to be effective in improving parental knowledge, behaviour, and self-efficacy, though limitations in observational data highlight areas for further research.

Cancer

Three systematic reviews evaluated the effectiveness of parenting interventions on parenting outcomes for families of children with cancer. These interventions targeted parental behaviour, stress, and caregiving knowledge, demonstrating overall positive effects.

Parental behaviour was addressed in two reviews (Eccleston et al., 2015; Law et al., 2014). Eccleston et al. (2015) found that PST significantly improved problem-solving skills associated with parenting a child with cancer. Law et al. (2014) reported small but significant improvements in parent behaviour following family-based psychological interventions.

Parental knowledge, stress, and care burden were discussed in one review (Nurhidayah et al., 2023). The Family-Centered Empowerment Model (FCEM) intervention improved mothers' caregiving knowledge, including dietary needs, infection control, and bleeding prevention, while also preventing chemotherapy complications. The FACE module was shown to reduce parental stress, and the Parent Empowerment Program (PEP) improved parents' knowledge, attitudes, and behaviours in caring for children with cancer. Caregiving burden was significantly reduced in intervention groups compared with controls. Parents in the empowerment group also demonstrated higher coping scores in the planning dimension by day 21.

Overall, the reviews indicate that parenting interventions for cancer are effective in enhancing parenting behaviour, reducing stress and care burden, and improving caregiving knowledge and coping strategies.

Other chronic medical conditions

Other chronic medical conditions included congenital heart disease, chronic pain, atopic dermatitis/eczema, skin diseases, gynaecological disorders, inflammatory bowel disease, and cystic fibrosis.

Four systematic reviews evaluated the effectiveness of parenting interventions on parenting outcomes for families of children with congenital heart disease. The interventions focused on parenting competencies, coping, self-efficacy, and behaviour, with overall positive findings. Parenting competencies and self-efficacy were discussed in three reviews (Jackson et al., 2016; Kasparian et al., 2019; Mitchell et al., 2020). Jackson et al. (2016) reported significant improvements in parenting competencies, such as feelings about being a parent and parenting style, measured using the PSOC. Kasparian et al. (2019) highlighted positive effects on maternal coping, parenting confidence, and satisfaction with clinical care, although outcomes related to parenting stress were not reported. Mitchell et al. (2020) found significant intervention effects on self-efficacy and parent-reported behaviours, though no effects were noted in observational measures. Parent behaviour was addressed in two reviews (Law et al., 2014; Mitchell et al., 2020). Law et al. (2014) observed small but significant improvements in parent behaviour post-treatment following family-based psychological interventions. Mitchell et al. (2020) similarly found positive effects on parent-reported behaviours, specifically within certain condition groups.

Overall, the findings indicate that parenting interventions for congenital heart disease are effective in improving parenting competencies, coping, and self-efficacy. However, limitations in reporting observational outcomes suggest the need for further research to comprehensively assess intervention impact.

Three systematic reviews evaluated the effectiveness of parenting interventions on parenting outcomes for families of children with chronic pain. These interventions targeted problem-solving skills, parent behaviour, and self-efficacy, yielding consistent positive results. Eccleston et al. (2015) reported that PST effectively improved problem-solving skills in parents managing children's chronic pain. Law et al. (2014) observed small but significant improvements in parent behaviour following psychological interventions. Wright et al. (2023) found small but significant effects on parenting self-efficacy and confidence (SMD = −0.38, 95% CI [−0.09, 0.84]), with consistent improvements when combining post-intervention and follow-up time points (SMD=0.34, 95% CI [0.06, 0.62]). The findings suggest that parenting interventions are effective in improving problem-solving skills, behaviour, and self-efficacy for parents managing chronic pain in children.

One systematic review evaluated parenting interventions for parents of children with atopic dermatitis or eczema. Mitchell et al. (2020) reported significant improvements in parents' self-efficacy and parent-reported parenting behaviours, particularly among mothers managing their child's eczema. However, no significant effects were observed in observational measures of parenting behaviour. These findings suggest that interventions targeting atopic dermatitis or eczema are effective in enhancing parents' confidence and perceived abilities to manage their child's condition, although observational outcomes remain underexplored.

No systematic reviews focused exclusively on cystic fibrosis, but three reviews included it within the broader context of chronic medical conditions. These reviews demonstrated significant improvements in parenting competencies, behaviour, and self-efficacy. Jackson et al. (2016) reported improvements in parenting competencies, such as feelings about being a parent and parenting style, measured using the PSOC. Law et al. (2014) found small but significant effects on parent behaviour post-treatment following family-based psychological interventions. Mitchell et al. (2020) observed significant gains in parents' self-efficacy and parent-reported behaviours, though no effects were observed in observational measures. Although they are limited by the lack of cystic fibrosis-specific reviews, the findings suggest that parenting interventions are beneficial in supporting parents of children with this condition by improving their confidence and parenting practices.

Physical disabilities

Cerebral palsy

Six systematic reviews evaluated the effectiveness of parenting interventions on parenting outcomes for families of children with cerebral palsy, focusing on parent–child interactions, parenting style, stress, and communication behaviours. The findings were largely positive, although some outcomes lacked clarity due to incomplete reporting.

Parent–child interaction and communication were addressed in four reviews (Pennington, 2004; Whittingham et al., 2011; Tellegen & Sanders, 2013; Ward et al., 2020). Pennington et al. (2004) observed positive changes in interaction strategies among trained conversation partners, including reduced physical guidance, increased face-to-face contact, and decreased physical contact. However, no differences were noted in verbal interaction behaviours before and after instruction. Whittingham et al. (2011) found significant decreases in parental initiation behaviours and directives, alongside increases in parental responsiveness, consistent with parents becoming more responsive conversational partners. Tellegen & Sanders (2013) reported a large effect size for parenting style improvements (d=0.73, 95% CI [0.55, 0.90], p<.001). Ward et al. (2020), however, noted poor reporting of coaching intervention effectiveness, limiting conclusions about its impact on parent–child interactions.

Parental stress and self-efficacy were discussed in three reviews (Petcharat & Liehr, 2017; Wright et al., 2023; Ward, 2020). Petcharat & Liehr (2017) reported a significant reduction in parental stress from pre- to follow-up. Wright et al. (2023) observed small but significant improvements in parenting self-efficacy and confidence at both post-intervention and follow-up time points (SMD=0.34, 95% CI [0.06, 0.62]). However, Ward (2020) found poor reporting on stress and self-efficacy outcomes, limiting the strength of these findings.

Overall, parenting interventions for cerebral palsy demonstrated effectiveness in improving parent–child interaction, reducing parental stress, and enhancing parenting styles and self-efficacy. However, inconsistent reporting and limited observational data highlight the need for further research to strengthen the evidence base.

Hearing loss/impairment

Three systematic reviews examined the effectiveness of parenting interventions on parenting outcomes for families of children with hearing loss, focusing primarily on parent–child interaction and relational skills. Colombani et al. (2023) found improvements in relational skills in five of six studies assessing mother/parent–child interaction, highlighting the effectiveness of these interventions in fostering better relationships. King & Xu(2021) reported that mothers of children with cochlear implants gained efficacy in developing their child's listening skills, with advanced language facilitation techniques such as recasts and open-ended questions significantly predicting children's receptive language development. These findings suggest a strong link between improved parental knowledge and enhanced parent–child interactions. However, Ward et al. (2020) noted poor or unreported measures of coaching intervention effectiveness, making it difficult to draw definitive conclusions regarding outcomes for hearing-impaired children.

Other types of physical disabilities

Types of physical disabilities being reported on included traumatic brain injury, foetal alcohol spectrum disorder (FASD), Rhett syndrome, and lissencephaly. Two systematic reviews evaluated the effectiveness of parenting interventions for families of children with traumatic brain injury (TBI; Law et al., 2014; Wright et al., 2023). Law et al. (2014) reported small but significant improvements in parent behaviour following parent and family-based psychological interventions. Wright et al. (2023) found small but significant improvements in parenting self-efficacy and confidence, with consistent effects when combining post-intervention and follow-up time points

(SMD=0.34, 95% CI [0.06, 0.62]). These findings suggest that parenting interventions can positively impact parent behaviour and self-efficacy in the context of TBI.

A single systematic review assessed parenting interventions for developmental disabilities, including FASD. Kei et al. (2024) found a small but significant reduction in parental stress through parent-mediated interventions. Although it is limited in scope, this finding suggests potential benefits for addressing parental stress in families managing this condition.

One systematic review evaluated telehealth-based caregiver training interventions using applied behaviour analysis (ABA) for children with Rhett syndrome, lissencephaly, and other disabilities. Unholz-Bowden et al. (2020) reported overall improvements in caregiver performance in implementing ABA-based procedures, though some studies reported mixed results, with occasional declines in performance in specific scenarios. Despite these mixed findings, the review concluded that ABA-based interventions were effective in improving caregiver implementation skills.

No systematic reviews reported on parenting outcomes specific to children with chromosomal abnormalities. This gap highlights the need for further research in this area.

Unspecified disabilities

Four systematic reviews evaluated the effectiveness of parenting interventions on parenting outcomes for families of children with unspecified disabilities. These interventions focused on parental skills, parenting style, stress, attitudes, and family development, with findings demonstrating overall positive effects.

Parenting skills, stress, and family relationships were addressed in Golfenshtein et al. (2016), which reported immediate post-intervention decreases in parenting stress for most interventions (n=23). The strongest effects were observed in multicomponent programmes (n=8/9), while four studies found no significant differences between comparison groups. These findings suggest promising outcomes for multicomponent interventions in reducing stress and improving parental skills.

Parenting attitudes and knowledge were discussed in Jang et al. (2023) and McCarthy & Guerin (2022). Jang et al. (2023) found that parenting education significantly improved parental attitudes by helping parents acquire knowledge aligned with social and temporal changes and fostering what the authors refer to as “correct” parenting attitudes. McCarthy & Guerin (2022) noted frequent improvements in parent and family development themes, particularly in parental knowledge.

Parenting style was evaluated in Tellegen & Sanders (2013), which reported a significant large effect size for improvements across all levels of the Stepping Stones Triple P programme (SSTP; d=0.73, 95% CI [0.55, 0.90], p<.001). These findings highlight the effectiveness of SSTP interventions in enhancing parenting style.

Overall, parenting interventions for unspecified disabilities demonstrated significant improvements in parental skills, stress reduction, attitudes, and family development, underscoring their broad applicability and effectiveness.

Children with special healthcare needs

Four systematic reviews evaluated the effectiveness of parenting interventions on parenting outcomes for families of children with special healthcare needs, focusing on parental knowledge, parenting style, competencies, stress, and activation. The findings consistently demonstrated positive outcomes across these domains.

Parental knowledge, attitudes, and behaviours were addressed in Casagrande & Ingersoll (2021), which reported improvements in parental knowledge about diagnoses, treatments, and advocacy strategies, as well as attitudes regarding advocacy skills and confidence. However, behavioural changes were rarely measured, and findings related to service access were inconsistent, highlighting areas where further research is needed.

Parenting competencies and confidence were examined in Jackson et al. (2016) and Mirza et al. (2018). Jackson et al. (2016) found positive gains in parenting competencies, such as feelings about being a parent and parenting style, as measured by the PSOC. Mirza et al. (2018) reported significant improvements in parental activation, confidence in managing their child's healthcare, empowerment in meeting their child's needs, and coping abilities.

Parental stress was evaluated in Petcharat & Liehr (2017), which found a significant reduction in stress from pre- to follow-up test, demonstrating the effectiveness of interventions in alleviating stress among parents of children with special healthcare needs.

Overall, these findings highlight the effectiveness of parenting interventions in improving knowledge, competencies, empowerment, and stress reduction for parents of children with special healthcare needs. Although outcomes related to behaviour and service access were less consistent, the overall evidence supports the value of these interventions.

Parenting outcomes categorised by key domains

Parenting practices

The impact of parenting interventions on parenting practices, encompassing skills, techniques, and strategies, were assessed in 47 systematic reviews, with 42 (89%) demonstrating positive effects. Improvements often centred on behavioural and communication techniques, such as those described by Eccleston et al. (2015) and Zhou et al. (2024), which reported enhanced problem-solving skills in parents of children with chronic health conditions (e.g. Zhou et al. 2024; SMD=0.43, n=1,887, k=1 2, 95% CI [0.27, 0.58]). Systematic reviews reporting on positive parenting (e.g. Dekkers et al., 2022; Doffer et al., 2023) consistently showed significant improvements, while six out of eight systematic reviews reporting on interventions addressing dysfunctional parenting styles (e.g. De Graaf et al., 2008; Fang et al., 2023) reported reductions in negative practices for a range of parenting interventions, including the Stepping Stones Triple P (SSTP) intervention and parent–child interaction therapy.

Behavioural and communication-focused interventions were particularly effective. King & Xu(2021) highlighted the use of language facilitation techniques to improve communication with children with hearing loss, and Beaudoin et al. (2014) demonstrated the success of a short-term intervention targeting parents' use of eye contact and gestures. These improved practices often translated into stronger parent–child interaction, as seen in Dekkers et al. (2022).

Parenting stress

The impact of parenting interventions on parenting stress was evaluated in 34 systematic reviews, with 24 (70.1%) reporting significant reductions. For example, Costa et al. (2021) found moderate evidence supporting the Triple P Positive Parenting programme in reducing stress levels for parents of children with appearance-affecting health conditions, and Golfenshtein et al. (2016) highlighted immediate decreases in parenting stress post-parenting stress interventions. However, eight systematic reviews reported no significant changes in parenting stress as a result of parenting interventions. Nurhidayah et al. (2023) measured "parental care burden" (a term used in the systematic review referring to parental care responsibilities), specifically assessing the negative physical and mental effects of caregiving for a child with cancer, and reported significant reductions in stress following the interventions.

Parent–child interaction

The impact of parenting interventions on parent–child interaction outcomes were examined in 23 systematic reviews, with 18 (78%) showing positive effects. This outcome was frequently assessed in interventions targeting ASD (n=6), where five systematic reviews, including Hernandez-Ruiz (2021) and Rojas-Torres (2020), demonstrated significant improvements. Interventions addressing parenting interventions for children with ADHD (n=3) also showed positive impact, such as those by Dekkers et al. (2022) and Doffer et al. (2023).

Parental responsiveness, a key component of positive parent–child interaction, was assessed in 12 systematic reviews, with 75% (n=9) reporting positive improvements resulting from various parenting interventions for children with various types of disability. For example, Meadan et al (2009) found that parents effectively learned and implemented strategies such as prompting and modelling through parent-implemented interventions such as reciprocal imitation training (RIT), modified incidental teaching sessions (MIT), and functional communication training (FCT). Similarly, Roberts & Kaiser (2011) demonstrated that parent training interventions such as the Hanen Parent Program and Enhanced Milieu Teaching (EMT) significantly improved parental responsiveness and communication during interactions with children with language impairments ($g=0.73$, $p<.001$, 95% CI [0.26, 1.20]).

Parent knowledge and understanding

Nineteen systematic reviews examined the impact of parenting interventions on "parent knowledge and understanding", with 15 (78.9%) reporting positive results. This outcome domain was a particular focus on interventions for carers of children with chronic conditions and developmental disabilities. For instance, Mulyana et al. (2023) demonstrated enhanced caregiver understanding of chronic diseases as a result of internet-based interventions, while Casagrande & Ingersoll (2021) and Tabatabaei et al. (2022) highlighted improvements in knowledge related to ASD as a result of parent-empowerment programmes and parent training interventions respectively. Nurhidayah et al. (2023) showed increased parental knowledge on dietary needs and infection control for children with cancer, leading to greater confidence in caregiving. King & Xu(2021) emphasised that gains in parental knowledge through caregiver coaching about child development were directly linked to improved parent–child interaction for children with hearing loss.

Parenting efficacy

Parenting efficacy, or perceived competence, was evaluated in 16 systematic reviews, with 14 (88%) showing positive outcomes. Efficacy was frequently assessed in systematic reviews on developmental disabilities (n=4) and ADHD (n=3), with all ADHD-related systematic reviews, such as Colalillo & Johnston (2016) and Dekkers et al. (2022), reporting improvements in response to a range of parenting interventions. Conversely, only two systematic reviews on developmental disabilities (De Graaf et al., 2008; Fang et al., 2023) showed significant improvements in parenting efficacy.

To ensure comprehensive reporting, the PRISMA guidelines were followed throughout the review process. The completed PRISMA checklist is provided in Appendix B5 Table 5 'PRISMA checklist'.

RQ2 & RQ3. Meta-analysis and meta-regression

To address RQ2, meta-analysis was conducted to evaluate the effectiveness of parenting interventions in improving outcomes for parents/carers and children and young people with a range of disabilities, and to explore how outcomes vary across different types of disabilities and age groups (0 to 5, 6 to 12, and 13 to 25). To answer RQ3, meta-regression was conducted to identify components of parenting interventions that were statistically associated with greater effectiveness and to examine how these components contributed to outcomes for children and young people with disabilities, and their caregivers.

Study selection

The process of selection of systematic reviews has been described above, as part of the umbrella review. Drawing on this data, a total of 255 individual studies from 33 systematic reviews provided extractable data for meta-analysis. Data from the remaining 73 systematic reviews could not be extracted because they did not report outcomes separately for each individual study. From the 33 systematic reviews with extractable data, there were 241 randomised trials and 14 quasi-experimental studies. The following analysis focuses only on the randomised controlled trials, because it was prespecified that quasi-experimental studies would only be included if there were a lack of randomised trials identified.

Characteristics of included studies

From these 241 individual studies, at least 14,475 participants provided data for meta-analysis on at least one outcome (Table 5). Sample sizes of individual studies ranged from 8 to 621, with a median of 59. Note that not all reviews provided sample size data, so this is an underestimate of the true number of participants who provided data. Moreover, many reviews did not specify whether sample sizes were based on the number of children or the number of parents who participated, so these could not be reported separately.

Risk of bias in studies

Of the 241 studies providing data for meta-analysis, 43 were judged by the systematic review authors to be at low risk of bias (or high quality), 40 to be unclear risk of bias (moderate quality), and 98 to be high risk of bias (or low quality). A further 60 studies were from reviews that did not report on the risk of bias or quality of individual studies. As mentioned above, most reviews used the Cochrane risk of bias tool (n=31, 29.2%) and the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) (n=15, 14.2%) to evaluate studies.

Results of individual studies

Data from individual studies is available in an online appendix.[8]

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[8] See: https://osf.io/zqy29/files/osfstorage

Table 5. Number of studies and participants providing data for meta-analysis stratified by type of disability and outcome

Type of outcome	No. studies	Minimum no. participants*
Child-related only	133	6,883
Both child- and parent-related	80	4,846
Parent-related only	28	2,746
Specific child-related outcome		
Behavioural	119	6,107
Disability-specific	70	5,038
Language and communication	45	1,461
Child development and cognitive skills	19	1,094
Social skills and interaction	22	1,289
Emotional and psychological	11	816
Other	13	1,046

Type of outcome	No. studies	Minimum no. participants*
Specific parent-related outcome		
Parenting practices	34	2,561
Parent–child interaction	30	2,732
Parental stress	29	1,409
Parental wellbeing	26	1,188
Parenting efficacy	19	2048
Other	6	416
Type of disability	**No. studies**	**Minimum no. participants***
ASD	93	3,919
ADHD	53	3,876
Brain injury	20	1,572
Developmental delay	11	197
Diabetes	10	1,000
Speech and language impairment	10	138
Other	44	3,773

* This is the minimum number of participants, because some reviews did not report study sample sizes.

ASD = autism spectrum disorder; ADHD = attention deficit hyperactivity disorder.

Results of syntheses for RQ2: effectiveness of parenting interventions

Overall, a meta-analysis pooling data from 213 studies found that – on average – parenting interventions had a positive effect on child-related outcomes (SMD=0.43, 95% CI=0.37–0.49; I^2=80%; 213 studies). However, there was a high degree of heterogeneity between studies, as indicated by the 95% prediction interval (–0.22 to 1.08). This suggests that although the average effect on child-related outcomes is positive, the true effect of some interventions in some contexts may be negligible or even negative.

Pooled data from 108 studies found that – on average – parenting interventions also had positive effects on parent-related outcomes (SMD=0.40, 95% CI=0.31–0.50; I^2=75%; 108 studies). However, as with child-related outcomes, there was substantial heterogeneity, as reflected by the 95% prediction interval (–0.41 to 1.21). This indicates that although most parenting interventions show positive effects on parent-related outcomes, some may have minimal or even negative effects in certain contexts.

Results of the meta-analysis were similar after removing studies that were judged to be of high risk of bias and/or low quality, both for child-related outcomes (SMD=0.43, 95% CI=0.31–0.55; I^2=79%; 66 studies) and parent-related outcomes (SMD=0.47, 95% CI=0.33–0.61; I^2=80%; 50 studies).

Meta-analyses for specific domains of child- and parent-related outcomes are shown in Figure 2; these analyses found strong evidence for the effectiveness of parenting interventions across all domains of outcomes, as set out above. For the subsequent sub-group meta-analyses and meta-regression, we report on a single child-related outcome and a single parent-related outcome per study (whichever was identified as primary in the systematic review from which the data was extracted).

Sub-group meta-analyses were performed stratified by the type of disability and age. These showed that, on average, parenting interventions appeared effective at improving child- and parent-related outcomes across a wide range of disabilities (Figure 3; Table 6). Moreover, parenting interventions were effective for children across all ages; however, the effectiveness was greatest in the younger ages (Figure 4; Table 6). These potential age differences in effectiveness were examined further using meta-regression (see the next section, on RQ3).

The GRADE certainty of evidence assessment for RQ2 is provided in Table 6. There was high-certainty evidence that parenting interventions are effective for improving child- and parent-related outcomes, overall and across the different types of child disability studied.

Figure 2. Pooled effect of parenting interventions across specific types of child- (213 studies overall) and parent-related (108 studies overall) outcomes (go to accessibility text)

Calculated from random-effects meta-analysis models, separately for each outcome domain. Points represent standardised mean differences and bands represent 95% confidence intervals.

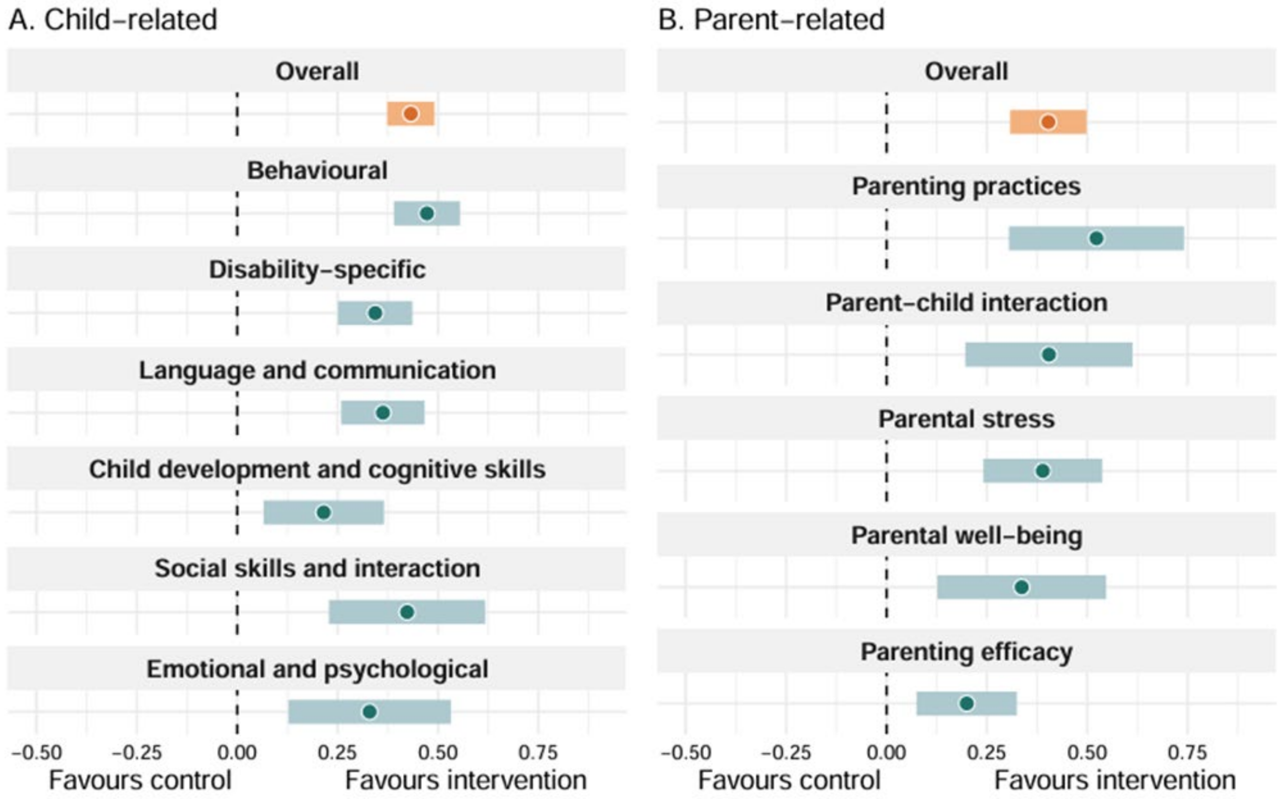


Table 6. GRADE certainty of evidence assessment for RQ2: Examining the effectiveness of parenting interventions for children with disabilities.

Outcomes	Effect size (95%CI)	Participants (studies)	Certainty of evidence (GRADE)	Comments
Child-related outcomes	**SMD 0.43** (0.37–0.49)	>11,766 (213 studies)	**High**	Positive effect was present across all types of disabilities and child-related outcomes, and after excluding studies at high risk of bias.
Parent-related outcomes	**SMD 0.40** (0.31–0.50)	>7,592 (108 studies)	**High**	Positive effect was present across all types of disabilities (only non-significant for diabetes) and parent-related outcomes, and after excluding studies at high risk of bias.

Data came from RCTs where participants were randomised to receive either a parenting intervention or a control condition (e.g. no intervention or wait list).

SMD = standardised mean difference in outcome between parental intervention and control groups, where higher numbers indicate more positive effects of the intervention.

There were *no* deductions in the certainty of evidence due to the following:

1. Risk of bias, because results were consistent after excluding high risk of bias studies
2. Inconsistency, because results were consistent across sub-groups
3. Indirectness, because evidence directly relates to the population of interest
4. Imprecision, because confidence intervals were narrow
5. Publication bias, because there was no clear evidence for asymmetry in funnel plots that would bias results towards finding a positive difference.

Figure 3. Disability-specific pooled effect of parenting interventions on child- (213 studies overall) and parent-related (108 studies overall) outcomes (go to accessibility text)

Calculated from random-effects meta-analysis models, separately for each type of disability. Points represent standardised mean differences and bands represent 95% confidence intervals. Child-related outcomes included: behavioural, disability-specific, language and communication, child development and cognitive skills, social skills and interaction, and emotional and psychological outcomes. Parent-related outcomes included: parenting practices, parent–child interaction, parental stress, parental wellbeing, and parenting efficacy outcomes. Results for specific outcome domains are shown in Figure 2.

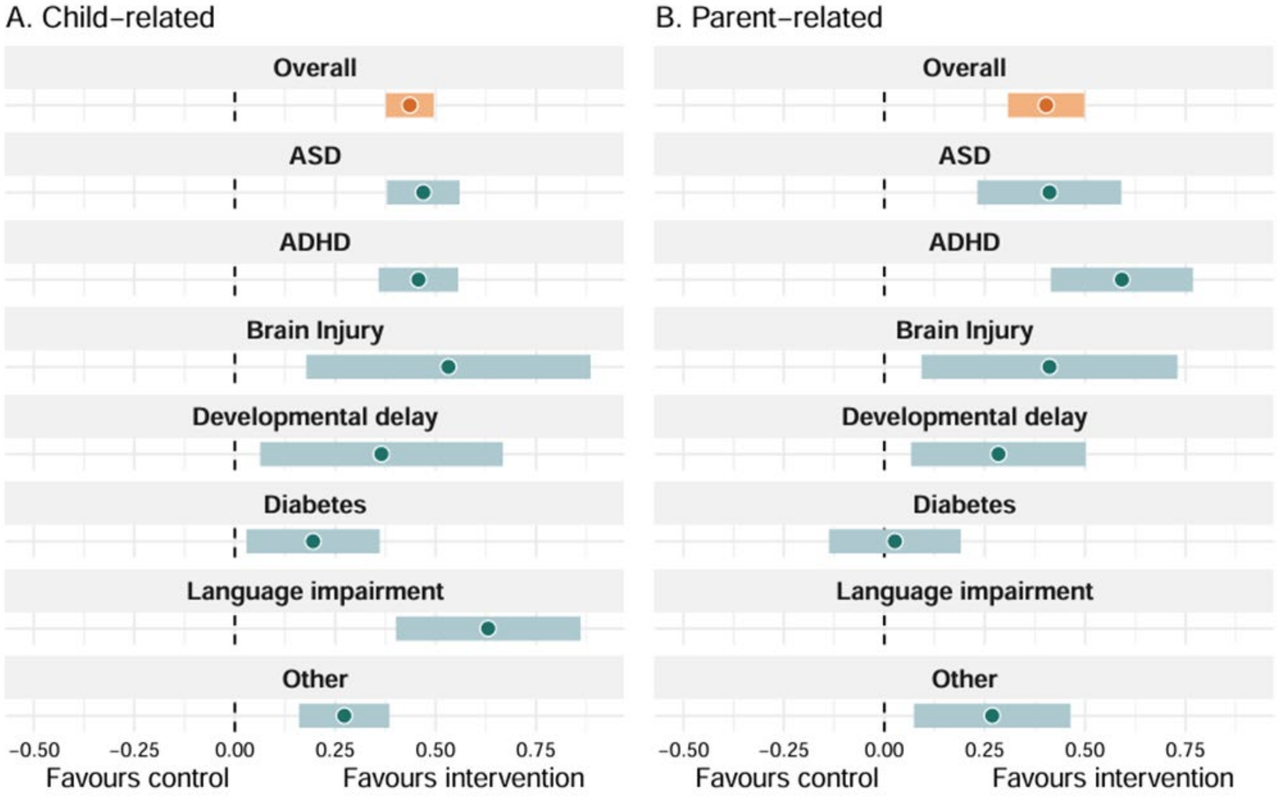
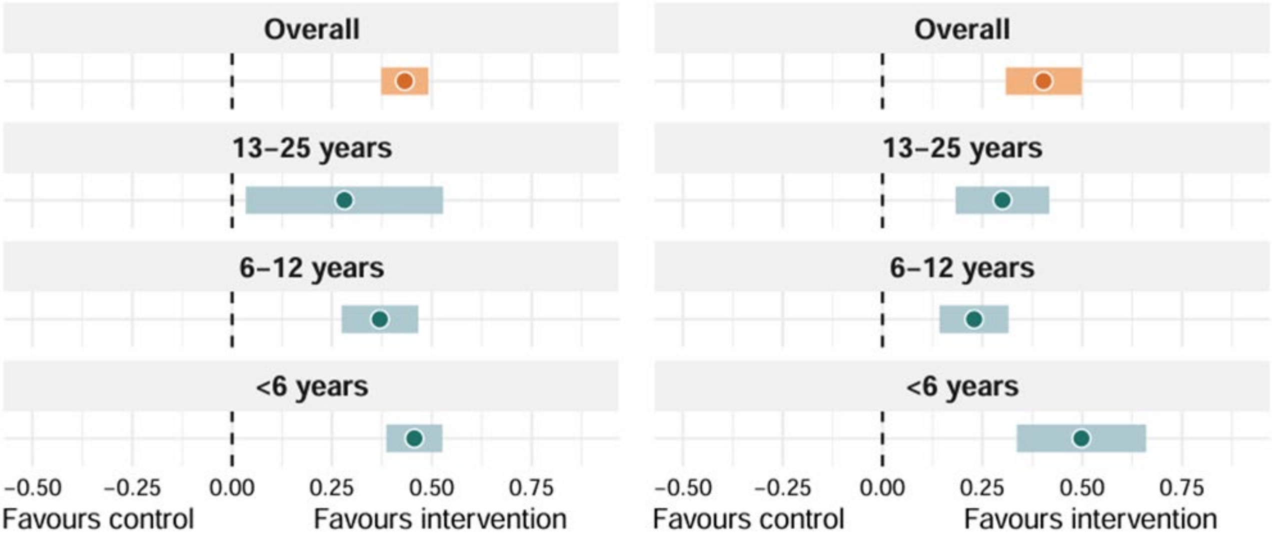


Figure 4. Age-specific pooled effect of parenting interventions on child- (213 studies overall) and parent-related (108 studies overall) outcomes

(go to accessibility text)

Calculated from random-effects meta-analysis models, separately for studies looking at each age group. Age groups calculated based on the mean age of children in the study. Points represent standardised mean differences and bands represent 95% confidence intervals. Child-related outcomes included: behavioural, disability-specific, language and communication, child development and cognitive skills, social skills and interaction, and emotional and psychological outcomes. Parent-related outcomes included: parenting practices, parent–child interaction, parental stress, parental wellbeing, and parenting efficacy outcomes. Results for specific outcome domains are shown in Figure 2.



Results of syntheses for RQ3: components of effective interventions

As mentioned above, the effectiveness of interventions differed substantially across studies, as reflected by the high heterogeneity identified (80% for child-related outcomes, 75% for parent-related outcomes). We examined components of interventions that may contribute to these differences in effectiveness using sub-group meta-analysis (Table 7) and meta-regression (Table 8 and Table 9).

Table 8 shows the results of three sets of meta-regression analyses for child-related outcomes. The first set of results is from univariable meta-regression analyses where each study-level predictor (i.e. demographic factors and intervention components) was included as the only predictor in its own analysis (model 1). The second set is from a full multivariable meta-regression including all study-level variables (model 2). The third set is from a multivariable meta-regression (model 3) including only type of demographics (age group and gender ratio), disability type, and type of intervention (because other study-level variables were not predictive and/or inconsistently reported).

Model 2, the full multivariable meta-regression model, explained R^2=8.7% of the heterogeneity in child-related outcomes (I^2=62%; p=.166). Model 3, the restricted multivariable model, explained R^2=9.3% of the heterogeneity in child-related outcomes (I^2= 64%; p=.052).

Table 9 shows meta-regression results for parent-related outcomes. Model 2, the full multivariable meta-regression model, explained R^2=9.2% of the heterogeneity in child-related outcomes (I^2=69%; p=.089). Model 3, the restricted multivariable model, explained R^2=7.4% of the heterogeneity in child-related outcomes (I^2=71%; p=.108).

For demographics, we found the following:

Disability type: The effectiveness of parenting interventions appeared relatively consistent across all types of disability studies for child-related outcomes (Table 8); meta-regression results did not identify any significant differences. However, there was a limited amount of data for some types of disability (e.g. diabetes), meaning we cannot rule out the possibility that small to moderate differences exist, but we did not have sufficient data to detect them. Conversely, in both multivariable meta-regression models (models 2 and 3), parenting interventions had more positive effects in parent-related outcomes for those focusing on children with ADHD compared with ASD (the latter was chosen as the reference category because it was the most studied type of disability) (Table 9). However, this difference was smaller and non-significant in sub-group and univariable meta-regression and sub-group meta-analyses (Table 7).

Age: In both univariable and multivariable meta-regressions, the effectiveness of interventions on child outcomes was greatest in those aged below 6 years, and smallest in those aged 13 to 25 years (Table 8). This was also identified in sub-group analyses (Figure 4 and Table 7). Conversely, there was not a clear difference in the effectiveness by age on parent-related outcomes (Table 9).

Gender ratio: We could not identify clear differences in the effectiveness of interventions based on the proportion of boys in the study; none of the meta-regression results for child- or parent-related outcomes reached the conventional threshold for statistical significance (Table 8 and Table 9). However, confidence intervals were wide, meaning we could not rule out the possibility of moderate to large differences.

For intervention components, we found the following:

Intervention type: There were no clear and statistically significant differences in effectiveness by parenting intervention type, for child- or parent-related outcomes. This could be because there is little true difference, or simply a lack of data to detect differences; the wide confidence intervals in Table 8 and Table 9 show we cannot rule out the possibility of moderate (SMD>0.2) to large (SMD>0.5) differences. As a result, the GRADE assessment concluded that there is very low-certainty evidence on how effectiveness differs by intervention types, both for child- and parent-related outcomes.

Setting: The effectiveness of parenting interventions was similar for face-to-face/mixed and remote interventions for both child-related (Table 8) and parent-related (Table 9) outcomes. However, confidence intervals included the possibility of moderate differences for child-related outcomes and large differences for parent-related outcomes. Therefore, the GRADE assessment concluded that there is low-certainty evidence for minimal difference effectiveness by setting for child-related outcomes, and there is very-low-certainty evidence for minimal difference in effectiveness by setting for parent-related outcomes (Table 10).

Format: The effectiveness of interventions was similar for individual (including individual families) and group/mixed interventions for both child-related (Table 8) and parent-related (Table 9) outcomes. However, confidence intervals included the possibility of moderate differences; thus, the GRADE assessment concluded that there is low-certainty evidence for minimal difference in effectiveness by format for both on child- and parent-related outcomes (Table 10).

Deliverer: For child-related outcomes (Table 8), there were no clear differences in effectiveness depending on who delivered the parenting intervention. The confidence intervals included the possibility of moderate differences; thus, the GRADE assessment concluded that there was low-certainty evidence for minimal differences in the effectiveness of intervention on child-related outcomes by deliverer (Table 10). For parent-related outcomes, univariable and multivariable meta-regression results showed interventions appeared less effective if they were peer-led (Table 9). However, the confidence intervals were wide and heterogeneity was high, so the GRADE assessment concluded there was low-certainty evidence for the effectiveness of parenting interventions on parent-related outcomes being lower with peer-led interventions (Table 10).

Table 7. Sub-group meta-analyses examining the effect of parenting interventions on child- (213 studies overall) and parent-related (108 studies overall) outcomes

Calculated from random-effects meta-analysis models, where higher standardised mean differences (SMD) indicate greater intervention effectiveness.

	Child-related				**Parent-related**			
	N studies	**SMD**	**95% CI**	**I^2**	**N studies**	**SMD**	**95%CI**	**I^2**
Type of disability								
ASD	84	0.47	0.38 to 0.56	63%	45	0.41	0.23 to 0.59	78%
ADHD	51	0.45	0.35 to 0.54	55%	26	0.59	0.42 to 0.77	72%
Brain injury	17	0.53	0.18 to 0.89	93%	8	0.41	0.09 to 0.73	69%
Developmental delay	10	0.37	0.06 to 0.67	83%	4	0.28	0.07 to 0.5	0%
Diabetes	7	0.2	0.03 to 0.36	0%	8	0.03	-0.14 to 0.19	0%
Speech and language impairment	9	0.63	0.40 to 0.86	0%	1	–	–	0%
Other	35	0.27	0.16 to 0.38	32%	16	0.27	0.07 to 0.46	67%
Mean age								
13 to 25 years	19	0.28	0.03 to 0.53	88%	8	0.3	0.18 to 0.42	0%
6 to 12 years	53	0.37	0.27 to 0.47	57%	24	0.23	0.14 to 0.32	0%

	Child-related				**Parent-related**			
	N studies	**SMD**	**95% CI**	**I^2**	**N studies**	**SMD**	**95%CI**	**I^2**
<6 years	117	0.46	0.39 to 0.53	50%	53	0.5	0.34 to 0.66	79%
Type of intervention								
Behavioural	112	0.45	0.37 to 0.54	86%	49	0.44	0.3 to 0.59	78%
Communication-based	38	0.52	0.38 to 0.66	62%	20	0.44	0.23 to 0.65	69%
Cognitive-behavioural	10	0.47	0.3 to 0.65	0%	4	0.43	−0.18 to 1.04	69%
Problem-solving	6	0.26	0.08 to 0.43	48%	4	0.08	−0.36 to 0.51	54%
Family-systemic	3	0.4	−0.12 to 0.92	0%	5	0.29	0 to 0.59	72%
Mindfulness-based	3	0.71	0.32 to 1.1	0%	4	0.89	0.37 to 1.41	38%
Setting								
Face-to-face/mixed	110	0.39	0.32 to 0.46	54%	71	0.39	0.27 to 0.52	78%
Remote	28	0.52	0.29 to 0.76	87%	11	0.38	0.16 to 0.6	68%

	Child-related				**Parent-related**			
	N studies	**SMD**	**95% CI**	**I^2**	**N studies**	**SMD**	**95%CI**	**I^2**
Format								
Group/mixed	65	0.44	0.33 to 0.55	82%	40	0.37	0.24 to 0.5	58%
Individual	94	0.42	0.33 to 0.51	75%	57	0.38	0.24 to 0.52	81%
Deliverer								
Professional	85	0.37	0.27 to 0.46	67%	56	0.37	0.23 to 0.5	72%
Researcher/student	12	0.39	0.18 to 0.61	40%	8	0.22	0.1 to 0.34	0%
Peers	4	0.55	0.15 to 0.94	54%	11	0.12	-0.05 to 0.29	29%

ASD = autism spectrum disorder; ADHD = attention deficit hyperactivity disorder; 95% CI = 95% confidence interval.

Table 8. Meta-regression examining causes of heterogeneity across studies in the effectiveness of parenting interventions on child-related outcomes (213 studies overall)

Calculated from random-effects meta-analysis models, where higher standardised mean differences (SMD) indicate greater intervention effectiveness.

	1. Univariable		**2. Multivariable, full**		**3. Multivariable, restricted**	
	SMD	**95% CI**	**SMD**	**95% CI**	**SMD**	**95%CI**
Type of disability						
ASD	Ref	Ref	Ref	Ref	Ref	Ref
ADHD	−0.01	−0.16 to 0.13	0.05	−0.14 to 0.25	0.09	−0.08 to 0.26
Brain injury	0.03	−0.19 to 0.24	0.2	−0.16 to 0.56	0.25	−0.02 to 0.51
Developmental delay	−0.12	−0.4 to 0.15	−0.16	−0.48 to 0.16	-0.19	−0.47 to 0.1
Diabetes	−0.27	−0.59 to 0.04	0.04	−0.35 to 0.44	-0.03	−0.42 to 0.35
Speech and language impairment	0.17	-0.16 to 0.5	0.23	−0.13 to 0.60	0.28	−0.07 to 0.63
Other	−0.17	−0.34 to 0.01	−0.08	−0.32 to 0.16	−0.06	−0.27 to 0.16

	1. Univariable		2. Multivariable, full		3. Multivariable, restricted	
	SMD	**95% CI**	**SMD**	**95% CI**	**SMD**	**95%CI**
Mean age						
13 to 25 years	−0.19	−0.39 to 0.00	−0.30	−0.57 to −0.02	−0.27	−0.53 to -0.01
6 to 12 years	−0.08	−0.22 to 0.06	−0.13	−0.29 to 0.04	−0.09	−0.24 to 0.06
<6 years	Ref	Ref	Ref	Ref	Ref	Ref
Gender ratio						
More boys*	−0.24	−0.52 to 0.05	0.27	−0.24 to 0.77	0.27	−0.21 to 0.75
Type of intervention						
Not stated/other	Ref	Ref	Ref	Ref	Ref	Ref
Behavioural	0.04	−0.08 to 0.16	0.11	−0.09 to 0.31	0.11	−0.06 to 0.28
Communication-based	0.11	−0.04 to 0.26	0.23	0.01 to 0.45	0.2	−0.01 to 0.40
Cognitive-behavioural	0.06	−0.23 to 0.34	0.24	−0.09 to 0.58	0.24	−0.07 to 0.56

	1. Univariable		2. Multivariable, full		3. Multivariable, restricted	
	SMD	95% CI	SMD	95% CI	SMD	95%CI
Problem-solving	−0.13	−0.47 to 0.21	0.01	−0.40 to 0.43	–	–
Family-systemic	−0.03	−0.56 to 0.50	-0.09	−0.71 to 0.54	0.03	−0.37 to 0.43
Mindfulness-based	0.25	−0.31 to 0.80	0.21	−0.41 to 0.83	–	–
Setting						
Face to face/mixed	Ref	Ref	Ref	Ref	–	–
Remote	0.10	−0.08 to 0.27	0.04	−0.26 to 0.35	–	–
Format						
Group/mixed	Ref	Ref	Ref	Ref	–	–
Individual	−0.02	−0.16 to 0.12	0.12	−0.04 to 0.29	–	–
Deliverer						
Not stated/other	Ref	Ref	Ref	Ref	–	–

	1. Univariable		2. Multivariable, full		3. Multivariable, restricted	
	SMD	**95% CI**	**SMD**	**95% CI**	**SMD**	**95%CI**
Professional	−0.11	−0.23 to 0.01	−0.17	−0.33 to −0.01	–	–
Researcher/student	−0.05	−0.31 to 0.21	−0.08	−0.41 to 0.25		
Peers	0.12	−0.32 to 0.55	0.07	−0.39 to 0.52		

ASD = autism spectrum disorder; ADHD = attention deficit hyperactivity disorder; 95% CI = 95% confidence interval; Ref = reference category.

* Treated continuously as proportion of boys in sample, meaning SMD estimate for gender ratio reflects the difference in effectiveness in a trial exclusively in boys versus exclusively in girls.

Table 9. Meta-regression examining causes of heterogeneity across studies in the effectiveness of parenting interventions on parent-related outcomes (213 studies overall)

Calculated from random-effects meta-analysis models, where higher standardised mean differences (SMD) indicate greater intervention effectiveness.

	1. Univariable		**2. Multivariable, full**		**3. Multivariable, restricted**	
	SMD	**95% CI**	**SMD**	**95% CI**	**SMD**	**95%CI**
Type of disability						
ASD	Ref	Ref	Ref	Ref	Ref	Ref
ADHD	0.18	−0.05 to 0.42	0.47	0.11 to 0.83	0.40	0.10 to 0.70
Brain injury	0.00	−0.37 to 0.37	0.34	−0.41 to 1.09	0.15	−0.34 to 0.65
Developmental delay	−0.09	−0.57 to 0.39	-0.04	−0.60 to 0.53	−0.11	−0.63 to 0.41
Diabetes	−0.38	−0.74 to −0.03	-0.08	−0.60 to 0.44	−0.23	−0.67 to 0.21
Speech and language impairment	0.79	−0.46 to 2.05	0.55	−0.78 to 1.87	0.62	−0.67 to 1.91
Other	−0.15	−0.42 to 0.13	0.02	−0.48 to 0.51	−0.15	−0.51 to 0.20

	1. Univariable		2. Multivariable, full		3. Multivariable, restricted	
	SMD	95% CI	SMD	95% CI	SMD	95%CI
Mean age						
13 to 25 years	−0.24	−0.60 to 0.12	−0.08	−0.62 to 0.46	0.02	−0.48 to 0.52
6 to 12 years	−0.28	−0.51 to −0.04	−0.2	−0.55 to 0.15	−0.14	−0.44 to 0.16
<6 years	Ref	Ref	Ref	Ref	Ref	Ref
Gender ratio						
More boys*	−0.41	−0.95 to 0.14	−0.46	−1.58 to 0.67	−0.42	−1.5 to 0.65
Type of intervention						
Not stated/other	Ref	Ref	Ref	Ref	Ref	Ref
Behavioural	0.08	−0.11 to 0.27	−0.11	−0.46 to 0.24	−0.01	−0.26 to 0.25
Communication-based	0.05	−0.2 to 0.29	0.06	−0.32 to 0.43	0.11	−0.20 to 0.43
Cognitive-behavioural	0.02	−0.52 to 0.56	−0.09	−0.75 to 0.56	0.10	−0.46 to 0.66

	1. Univariable		**2. Multivariable, full**		**3. Multivariable, restricted**	
	SMD	**95% CI**	**SMD**	**95% CI**	**SMD**	**95%CI**
Problem-solving	−0.35	−0.83 to 0.13	−0.33	−0.96 to 0.30	–	–
Family-systemic	−0.12	−0.56 to 0.31	−0.29	−0.92 to 0.34	−0.23	−0.78 to 0.32
Mindfulness-based	0.53	−0.06 to 1.12	0.31	−0.45 to 1.07	–	–
Setting						
Face to face/mixed	Ref	Ref	Ref	Ref	–	–
Remote	−0.02	−0.34 to 0.29	−0.06	−0.56 to 0.43	–	–
Format						
Group/mixed	Ref	Ref	Ref	Ref	–	–
Individual	0.01	−0.19 to 0.21	0.03	−0.22 to 0.27	–	–
Deliverer						
Not stated/other	Ref	Ref	Ref	Ref	–	–

	1. Univariable		2. Multivariable, full		3. Multivariable, restricted	
	SMD	95% CI	SMD	95% CI	SMD	95%CI
Professional	−0.07	−0.26 to 0.12	−0.03	−0.31 to 0.25	–	–
Researcher/student	−0.22	−0.57 to 0.13	0.17	−0.38 to 0.73	–	–
Peers	−0.32	−0.62 to −0.03	−0.53	−0.98 to −0.07	–	–

ASD = autism spectrum disorder; ADHD = attention deficit hyperactivity disorder; 95% CI = 95% confidence interval; Ref = reference category.

* Treated continuously as proportion of boys in sample, meaning SMD estimate for gender ratio reflects the difference in effectiveness in a trial exclusively in boys versus exclusively in girls.

Table 10. GRADE certainty of evidence assessment for RQ3: components of effective parenting interventions for children with disabilities for child- and parent-related outcomes

		Difference in effect size (95%CI)	Participants (studies)	Certainty of evidence (GRADE)	Comments
By type					
Child-related	No clear differences (**all p>.05**) in effectiveness by intervention type in univariable or multivariable meta-regression.	**See Table 8**	>11,766 (213 studies)	**Very low**	Downgraded due to serious imprecision, with confidence intervals including the possibility of large (>0.5) effects.

		Difference in effect size (95%CI)	Participants (studies)	Certainty of evidence (GRADE)	Comments
Parent-related	No clear differences (**all p>.05**) in effectiveness by intervention type in univariable or multivariable meta-regression.	**See Table 9**	>7,592 (108 studies)	**Very low**	Downgraded due to serious imprecision, with confidence intervals including the possibility of large (>0.5) effects.
By setting					
Child-related	No clear differences (**all p>.05**) in effectiveness between remote and face-to-face/mixed interventions in univariable or multivariable meta-regression.	Remote compared with face-to-face/mixed: **SMD 0.04** (−0.26 to 0.35)	>11,766 (213 studies)	**Low**	Downgraded due to imprecision, with confidence intervals including the possibility of moderate (>0.2) effects.
Parent-related	No clear differences (**all p>.05**) in effectiveness between remote and face-to-face/mixed interventions in univariable or multivariable meta-regression.	Remote compared with face-to-face/mixed: **SMD −0.06** (−0.56 to 0.43)	>7,592 (108 studies)	**Very low**	Downgraded due to serious imprecision, with confidence intervals including the possibility of large (>0.5) effects.

		Difference in effect size (95%CI)	Participants (studies)	Certainty of evidence (GRADE)	Comments
By format					
Child-related	No clear differences (**all p>.05**) in effectiveness between individual and group-based interventions in univariable or multivariable meta-regression.	Individual compared with group: **SMD 0.12** (−0.04 to 0.29)	>11,766 (213 studies)	**Low**	Downgraded due to imprecision, with confidence intervals including the possibility of moderate (>0.2) effects.
Parent-related	No clear differences (**all p>.05**) in effectiveness between individual and group-based interventions in univariable or multivariable meta-regression.	Individual compared with group: **SMD 0.03** (−0.22 to 0.27)	>7,592 (108 studies)	**Low**	Downgraded due to imprecision, with confidence intervals including the possibility of moderate (>0.2) effects.
By deliverer					
Child-related	No clear differences (**all p>.05**) in effectiveness by deliverer in univariable or multivariable meta-regression.	**See Table 8**	>11,766 (213 studies)	**Low**	Downgraded due to imprecision, with confidence intervals including the possibility of moderate (>0.2) effects.

		Difference in effect size (95%CI)	Participants (studies)	Quality of evidence (GRADE)	Comments
Parent-related	Lower effectiveness for peer-led interventions in multivariable meta-regression. No other clear differences (**all p>.05**) by deliverer in univariable or multivariable meta-regression.	Peer-led programmes compared with others: **SMD −0.53** (−0.98 to −0.07) **See Table 9** for other comparisons	>7,592 (108 studies)	**Very low**	Downgraded due to imprecision, because confidence intervals were wide, and serious inconsistency, because heterogeneity was high for peer-led programmes.

Data came from RCTs where participants were randomised to receive either a parenting intervention or a control condition (e.g. no intervention or wait list).

SMD = standardised mean difference from fully adjusted multivariable meta-regression.

Publication bias

Funnel plots were constructed for both child- and parent-related outcomes (Figure 5 and Figure 6), plotting the effect size (standardised mean difference) of each individual study against its standard error. Asymmetry in funnel plots can suggest small-study effects, which may be due to publication bias but can also arise from other factors, such as true heterogeneity or methodological differences between studies.

For child-related outcomes, Egger's test indicated strong evidence of funnel plot asymmetry (p<.0001), but the observed bias was in the direction of smaller effect sizes in studies with larger standard errors (b = –0.05). This pattern is the opposite of what would be expected if publication bias were driving an overestimation of positive effects.

For parent-related outcomes, there was insufficient evidence to detect asymmetry in the funnel plot (b=0.26, p=0.24).

Figure 5. Funnel plot examining publications' small-study effects (a potential sign of publication bias) in child-related outcomes (go to accessibility text)

Higher standardised mean differences reflect more positive effects of the intervention compared with the control.

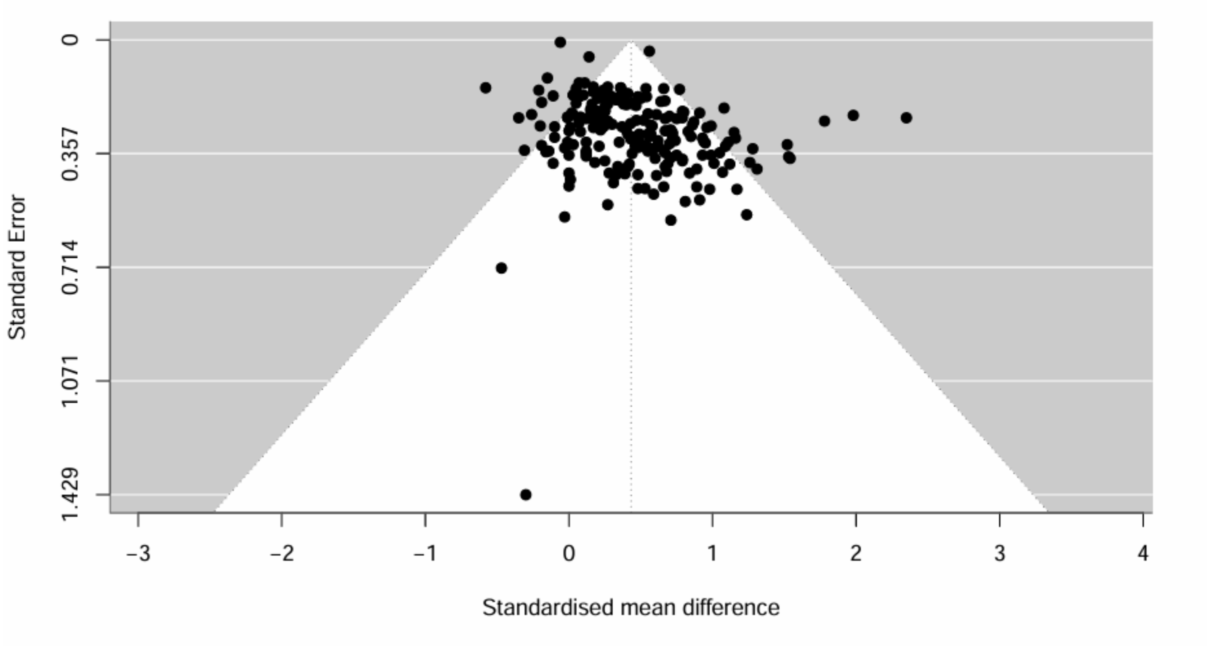
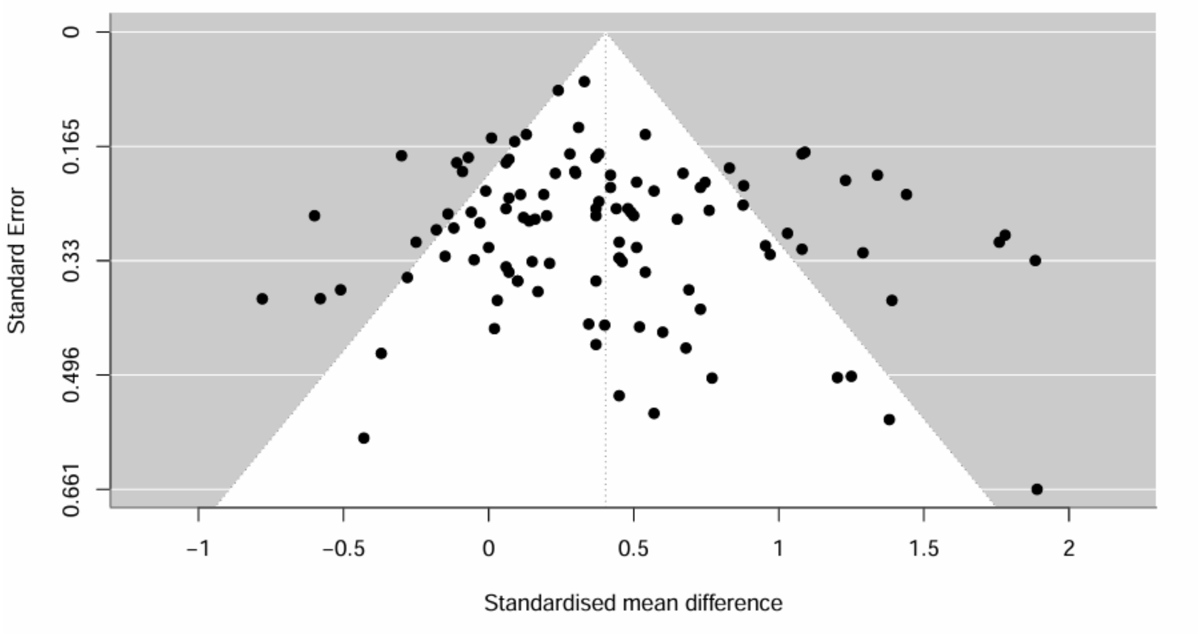


Figure 6. Funnel plot examining small-study effects (a potential sign of publication bias) in parent-related outcomes (go to accessibility text)

Higher standardised mean differences reflect more positive effects of the intervention compared with the control.



RQ4. Qualitative meta-synthesis

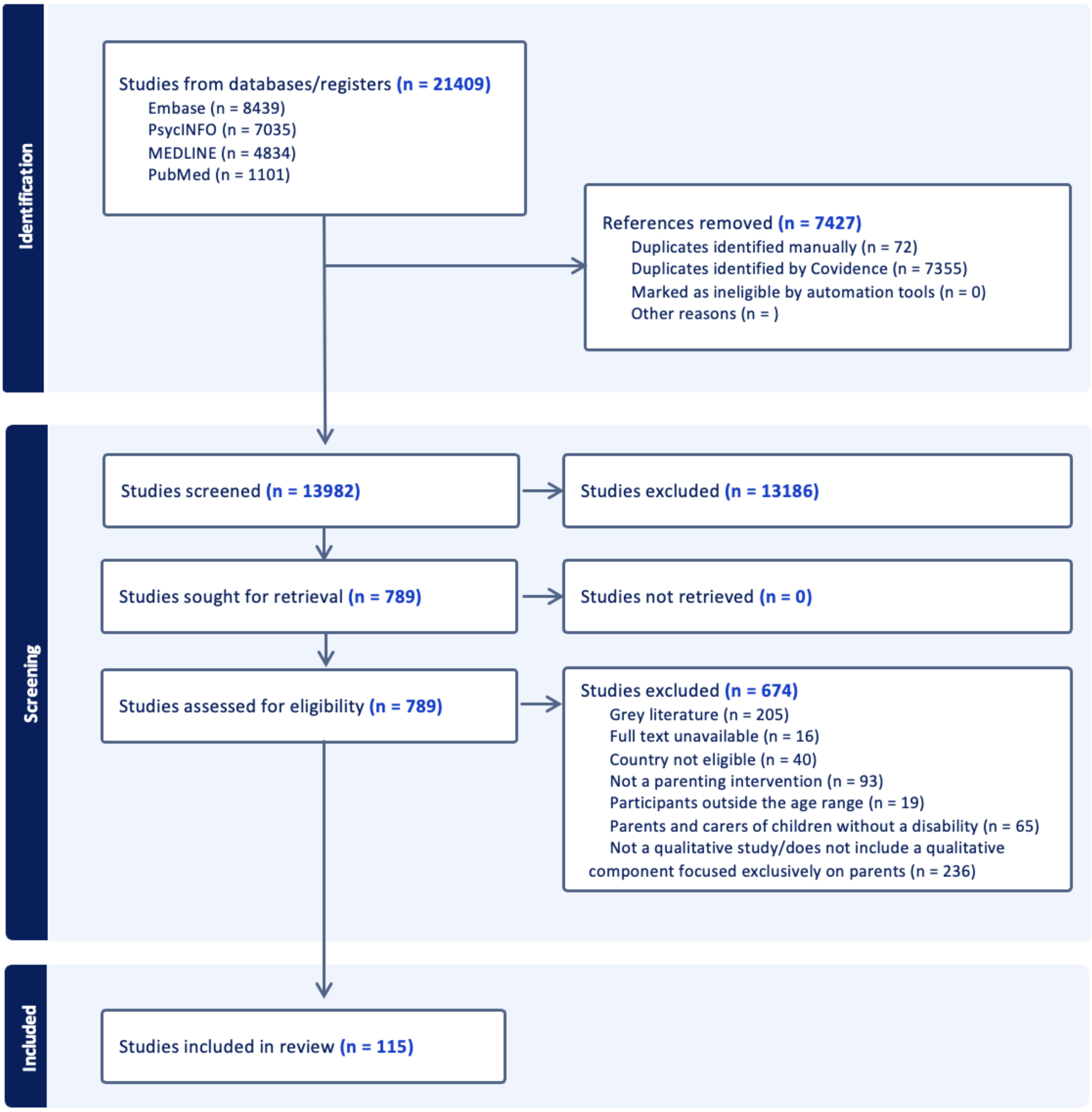
To address RQ4, we used the JBI meta-aggregation approach to meta-synthesis to understand the key features that were seen to support or limit engagement, acceptability, and effectiveness, from the perspective of parents and caregivers who had taken part in a parenting intervention.

Study selection

After employing the search strategy described above, we identified 21,409 studies (8,439 from Embase, 7,035 from PsycInfo, 4,834 from MEDLINE, and 1,101 from PubMed) and imported the entries to Covidence. Covidence automatically deduplicated the references, and the remaining 13,982 were examined in the subsequent steps.

Once the deduplication was finished, the researchers went through a consistency check for titles and abstracts, to ensure that studies were being identified systematically and consistently. In this check, all raters (GF, SI, SR, and GM) achieved satisfactory consistency in their first round, above the .74 threshold (range: .87 to .95). After this consistency check, the remaining entries were screened in relation to their titles and abstracts (each entry being assessed by one independent researcher), with 789 moving forward to the full-text screening. After the full-text screening (with each entry being assessed by two independent researchers), 674 studies were excluded, with the remaining 115 being analysed in the current meta-synthesis. A flowchart of the study selection can be found in Figure 7.

Figure 7. PRISMA flowchart for meta-synthesis (go to accessibility text)



Study characteristics

Regarding the countries in which the 115 studies took place, the location with the most publications was the United States (n=37), followed by 31 in the United Kingdom, 18 in Australia, 16 in Canada, 3 in Sweden, 2 in Ireland, 2 in the Netherlands, 1 each in Denmark, Germany, New Zealand, Norway, and Switzerland, and 1 taking place between Australia and Canada. The caregivers described in these studies had children with a range of disabilities, with ASD being the most common (32 studies addressing it exclusively and 23 studies addressing it alongside other types of disability. Eight studies addressed caregivers of a child with ADHD exclusively and nine studies focused on ADHD alongside other disabilities (almost all of which also addressed ASD). Fourteen studies focused on or included caregivers of children with cerebral palsy (CP) and eight on children with "neurological dysfunction". Twelve studies focused on caregivers of children that had language impairments, six on visual loss, and two on hearing loss. Three studies addressed caregivers of individuals with severe mental illness, two of them focused on psychosis and one on bipolar disorder. Nineteen studies focused on individuals with a range of ongoing health conditions (chronic or not chronic), including asthma, eczema, cancer, juvenile arthritis, congenital heart issues, diabetes, and cystic fibrosis, as well as other unspecified conditions.

The studies included in this review addressed a wide range of parenting interventions (see footnote 2). The most prominent type of intervention was parent-mediated interventions (i.e. interventions that teach or help caregivers provide support to their child). Sixty-three studies addressed this type of intervention, delivered in various ways, and with a focus on different areas (e.g. focused on behaviours, communication, language, motor or social skills). Additionally, 30 studies reported on the experience of caregivers who had attended an intervention focusing on providing education or psychoeducation. Eleven studies focused on those attending support groups and peer networks as a form of parenting intervention, and eight studies focused on mindfulness-based parenting interventions. Two studies focused on family interventions with a focus on parenting components. Finally, 31 studies focused on parenting interventions that were delivered remotely or with any sort of technology assistance.

The number of participants in studies ranged from 1 to 172 (M=20.05), with two unclear about the number of caregivers who participated (Deotto et al., 2023; Bull et al., 2003). Thirty-five studies had an all-female sample. Among the studies that included both female and male caregivers, only one study had more male participants than females (Thompson-Janes et al., 2016), and no studies explicitly addressed only the perspectives of male caregivers participating in parenting interventions. In terms of demographic information, 46 out of the 115 studies reported on the participants' ethnicity. Out of those, six only included participants whose ethnicity was described as "White", and 21 included predominantly (>75%) White caregivers. Fourteen had mixed samples in terms of ethnicity. Four studies focused on the perspectives of caregivers of specific ethnic backgrounds: one each on Aboriginal caregivers (Jones et al., 2018), Asian caregivers (Kennedy et al., 2008), and Hispanic caregivers (Rollins et al., 2023), and a case study on an African American caregiver (Solis et al., 2004). One study was unclear about caregivers' ethnicity but reported that they were mostly "not from aboriginal backgrounds" (Armstrong et al., 2021).

Seventeen studies reported on the participants' socioeconomic status. Out of those, 13 described caregivers' socioeconomic information based on income strata: 3 included caregivers that were predominantly in the lower income strata, 6 included caregivers in a mixed income distribution, and 4 studies described participants predominantly in a high-income stratum. Two studies described caregivers' socioeconomic status based on the authors' own words, with one describing caregivers being from "low to middle socioeconomic" backgrounds (Shochet et al., 2019) and a case study describing the parent as belonging to the “lower middle class” (Solis et al., 2004). Finally, one study only reported the caregivers’ income range (Rogerson et al., 2019). For the full details on studies’ characteristics, see Appendix C1 Table 1 ‘Summary of primary qualitative studies included in the meta-synthesis’.

Quality appraisal

A summary of the quality appraisal, as assessed through the JBI Qualitative Critical Appraisal criteria, can be found in Appendix C2 Table 2 ‘Quality appraisal of primary studies for meta-synthesis, following the JBI Critical Appraisal Checklist for Qualitative Research’. Thirty-three investigations received scores between 8 and 10, denoting excellent quality. The majority of studies (n=77) received scores between 4 and 7, indicating medium quality. Five studies received scores below 4, denoting poor quality. The mean quality score was 6.81.

In terms of specific aspects of the methodological quality, almost all studies showed congruity between the research methodology and the methods used to collect data (n=114, 99.1%) and demonstrated overall congruity between the research methodology and the research question or objectives (n=113, 98.3%). They were also collectively strong regarding congruity between the research methodology and the interpretation of results (n=108, 93.9%), and the conclusions drawn in the research report flowing from the analysis or interpretation of the data (n=108, 93.9%). The studies were less consistent in regard to addressing the influence of the researcher on the research, and vice versa (n=30, 26.1%), describing their specific philosophical perspective and its relation to the research methodology employed (n=16, 13.9%), and only 5 studies (4.3%) included statements locating the researcher culturally or theoretically. In addition to the JBI Qualitative Critical Appraisal criteria, we also assessed the level of credibility of each theme in each study according to the JBI qualitative data extraction tool. Out of the 859 themes appraised, 671 were assessed as “Unequivocal” (78%). Below these findings, 151 themes were considered “Credible” (17%). Finally, 37 were considered “Not Supported” (5%). Following Foundations’ guidance and considering the high volume of credible and unequivocal findings (supporting reliable evidence), we also included the “not supported” findings in the analysis. Therefore, no research content was disposed of. The full appraisal information is presented in Appendix C3 Table 3 ‘Quality appraisal for individual themes in primary studies included in the meta-synthesis following the JBI tool’.

Study synthesis

Following the data analysis and synthesis steps described above, 14 synthesised themes were developed, sitting within the three predetermined overarching domains relating to each of the three aspects of RQ3. The last column in Appendix C1 Table 1 shows which specific studies contributed to each synthesised finding in this meta-synthesis. Selected data extracts from interviews with participants in the original studies are included to illustrate the themes of the meta-synthesis.

Domain 1: Facilitators of acceptability and engagement in parenting interventions

The first domain concerns facilitators of acceptability and engagement in parenting interventions and was informed by 111 out of the 115 studies. It is organised in five themes: 1) the importance of accessibility and convenience; 2) one size does not fit all: caregivers experience different interventions as catering to their needs; 3) the value of sharing experiences; 4) the importance of being cared for and promoting self-care; and 5) the value of wider family and network involvement.

Synthesised theme 1.1: The importance of accessibility and convenience

Finding statement: Practical accessibility and convenience factors play an important role in facilitating acceptability and engagement.

According to the meta-synthesis, a key factor for facilitating acceptability and engagement is how accessible and practical parenting interventions are. This theme was informed by 53 studies and describes different delivery characteristics related to the practical or logistical implementation of the intervention. A substantial proportion of these studies explored the experience of caregivers who had attended online parenting interventions. These studies largely reported that caregivers appreciated the convenience they bring:

> "I think the online training facilitated accessibility and it felt safe to participate from your own living room … Also, we didn't have to rush to go to [place], we could just open our laptop."
> – de Korte et al., 2022, p.5423

However, despite this being often reported, other findings indicate that online interventions were not appropriate for all caregivers, with "analogic" or alternative tools also being appreciated:

> "When you have a small booklet in your hand … you can flip back and forth quite quickly … I can look at it anytime … it was a little treasure … it's not dependent on me to go on the website or check if my device is charged."
> – Harris et al., 2022, p.671

Depending on the particular needs of the child, studies indicated that some parenting interventions were best delivered in a home setting:

> "They [practitioners] prefer to come for a home visit, so since our son has a lot of difficulties with, well hospitals and such, if he just sees the uniform he starts to scream … For us, it was a relief."
> – Fäldt et al., 2020, p.149

This indicates that how "practical" or accessible a parenting intervention is perceived to be varies according to each family's specific context. Along similar lines, it is noteworthy that despite the overall focus on the practical benefits of online and home-delivered interventions, some caregivers appreciate specific interventions where they have to go to a separate physical place:

> "Once she came in here it was good for her, she was so happy, she was happy to play in the school, playing with all the toys. She was happy to have a rest here and then every day after school I always went and picked her up. When she was two she came back and told me, 'Mum, mum I play toys, I play toys,' she said like that and I said, 'Oh this is the first time I've seen my daughter telling me that she was

> playing toys.'"
> – Jones et al., 2018, p.8

Hence, the findings again indicate that different parents have different needs, and "convenient" and practically accessible interventions have varying formats depending on families' context.

Confidence in synthesised theme 1.1: high

Synthesised theme 1.2: One size does not fit all: caregivers experience different interventions as catering to their needs

Finding statement: There isn't one-size-fits-all; different types of parenting interventions will suit different carers' needs.

The first synthesised theme in the 'facilitators' domain refers to caregivers appreciating parenting interventions as offers that cater to their specific needs. This theme was informed by 106 studies and is the synthesised theme that encompasses the largest number of individual studies. Overall, it indicates that caregivers appreciate a wide range of features of the interventions that they get access to. For instance, the studies reported that some caregivers were more likely to engage in interventions that were felt to have a clear structure:

> " … it was fantastic to have the ideas shown to me in a logical way and in a planned fashion that I could achieve."
> – Pattison et al., 2022, p.385

Besides acknowledging the programme's structure, the studies indicate that interventions are easier to engage with when their tasks seem achievable, as illustrated by the excerpt above. Besides being seen as achievable, the meta-synthesis of the studies indicates that caregivers appreciate interventions that are aligned with their lives or routine, not proposing a drastic change:

> "It feels really natural, we're not doing anything crazy different."
> – Waddington et al., 2020, p.127

Additionally, caregivers appreciate the didactic aspect of parenting programmes, especially when this includes clarifying the rationale of specific approaches and techniques:

> "[The group facilitator would] share what [children] were doing in the room, and that was always useful, so I could kinda see and then reconnect for him afterwards. … You know, here's the way this is supposed to work, here's what we're teaching the kids and here's why … or here's some examples of how this happens. Those were really useful and engaging."
> – King et al., 2022, p.1626

These transparent explanations, merged with other specific educational methods, described below, seem to help caregivers reassess their interactions with their children or their parenting practices:

> "And there were some days when I felt like our play time wasn't going as well … But then going back and seeing the video I could see places where we were

> connecting."
> – Amsbary et al. 2020, p.48

These intervention features could have the potential to empower caregivers and support and develop their sense of parental self-efficacy. Also helpful in promoting parental agency, the studies reported on caregivers appreciating being able to employ the interventions at their own pace:

> "I think it's great that we could just do that in our own time and in our own way (...) with no other people around, (...) no other appointments to attend either and you know, you do have a small child that still needs to have a nap, as well as two brothers who need to be picked up from school."
> – Verhaegh et al., 2022, p.6

When considering facilitators to engagement, studies made clear the importance of recognising that caregivers might be in different stages of their "journey" of parenting a child with a disability, with each step requiring different support. For instance, some caregivers who already had sufficient information about their children's disabilities might require a different type of support from those who were just starting to learn what their child's disability might mean:

> "For me, [other aspects than my child's heart defect] have been more interesting, in that he then also has neuropsychiatric difficulties which is what we struggle with as a family right now, much more than his heart defect. We have kind of landed in the heart defect and we know how to deal with it and what has become difficult today is this neuropsychiatric problem ... The neuropsychiatric part is much bigger for us right now and that's the type of groups we value most right now."
> – Carlsson & Mattsson, 2022, p.147

Given the stress that many caregivers described experiencing, in some cases the educational aspect of the parenting intervention was less important than what it could offer the caregiver themselves. For instance, this caregiver who attended a parenting intervention that combined mindfulness techniques with dance sessions stated:

> "After 5 years of a roller coaster ride since we got the [ASD] diagnosis, the dance therapy class has been like a small oasis of time and space that allowed me to take a break, focus on me a bit, share experiences with other parents in the same journey, and have some fun on top of it."
> – Champagne & MacDonald, 2022, p.7

Overall, this theme suggests that caregivers find acceptable and are willing to engage with interventions that make use of a wide range of different formats (group interventions, online interventions, etc.) as well as those that use a range of different techniques or approaches (e.g. those that include video examples, therapeutic modelling, offer praise, involve self-paced resources, or a combination of strategies). The studies make clear that there is no one-size-fits-all approach and that there are many types of parenting interventions that are perceived as acceptable, provided that they are adapted to the needs of that particular caregiver and are provided in a way that makes sense with their reality.

Confidence in synthesised theme 1.2: high

Synthesised theme 1.3: The value of a shared lived experience

Finding statement: Parents and carers appreciate having a sense of a shared experience with others, and also sharing their own experiences, leading to feeling "normal" or less stigmatised.

This theme was informed by 59 studies, most of which were examining the experience of caregivers who had attended some type of group interventions, but also other types of intervention that helped to validate and understand the experiences they were having (e.g. interventions delivered by a parent with lived experience). Firstly, these studies reported on the feeling of being understood and having peers that would "get" the struggles that caregivers face.

> "I absolutely do think that everyone needs someone that understands to talk to. There's definitely a ton of value in that because no one else understands – nobody. Unless you have a child, you don't understand."
> – Baudino et al., 2023, p.609

This idea of "no one else understanding", as exemplified above, leads many caregivers to feel isolated or stigmatised. In turn, these parenting interventions, especially when delivered in a group format, can offer an opportunity to change this scenario:

> "It's a support for me, not only for my children but for myself as far as getting out and socializing with people and getting a life … Because I had been alone for seven years … I just sat at home and you know, go take care of my quadriplegic sister or my mother or something like that. I never really got out, and once I started with the support and it's like oh, there's really people out here that understand me and you know … And I call that my home away from home."
> – Ainbinder et al., 1998, p.105

In addition to tackling loneliness, these group-based interventions can form learning environments. For instance, by having caregivers at different points in their "journey", some might find it helpful to hear advice from others or appreciate being able to offer support, even if this was provided by text, and not in person.

> "Last week, someone wrote and was completely shocked. She had been to an ultrasound and had heard the word 'wheezing' and she heard the word 'ASD' [atrial septal defect] and then she kind of closed down … I wrote that there are many different heart defects and what your daughter has is one of the most common defects and that means this and that, the whistling sound is that faint sound that we talk about … she thanked me for the explanation because it was what she needed."
> – Carlsson & Mattsson, 2022, p.146

These types of exchange are understood in these studies as positive experiences in both ways (for the ones hearing about how more experienced caregivers cope, as well as hearing practical support, but also for the ones who share their strategies). It is worth noting that these differences in the "journey" do not only concern the timing of diagnosis, but also the children's developmental stages.

By hearing the experiences of caregivers of older individuals, for example, peers anticipated potential needs that may arise.

This type of support might be especially valuable for specific populations. For instance, the study by Kennedy et al. (2008) focused on the experience of Asian American parents of youth with schizophrenia, attending a "group-based, self-management" parenting intervention. Participants highlighted the specific benefits of the intervention considering their cultural background. As presented in the study, children and families with lived experience of mental illness might be stigmatised in different Asian cultures. This could lead to caregivers rarely discussing this topic with peers and feeling isolated. In this particular report, caregivers appreciated the environment of sharing lived experiences promoted by a group intervention.

In addition to contact during the interventions themselves, peer interactions sometimes branched out from the initial setting and developed into a more ongoing or independent type of support or even friendships:

> "I was expecting it (the peer support intervention) to be somebody to talk to, but I didn't expect to make a friend."
> – Nicholas & Keilty, 2007, p.253

These continuing relationships or interactions could work as a way of having more long-term support after the end of the intervention. This support might be experienced as "embedding" features of the intervention in their lives, or opportunities for "checking in" with peers.

Confidence in synthesised theme 1.3: high

Synthesised theme 1.4: The importance of being cared for and promoting self-care

Finding statement: Parents and carers appreciate being cared for by practitioners or peers and also appreciate opportunities to take care of themselves.

Besides appreciating a sense of shared experience with other caregivers, as described in the previous theme, caregivers seem also to value other relationship features they build with other caregivers and practitioners. Synthesised theme 1.4 addresses this feature and is informed by 66 studies. The reports that form this synthesised theme illustrate how relationships matter in the context of parenting interventions:

> "Attending the groups was reassuring, 'because you never know it all … more reassuring than anything else, because again you know, you've just got the right people who are on board and working with you to check how things are going'."
> – Levickis et al., 2020, p.610

This reinforces that relationships matter and that when caregivers are supported and cared for, this can lead to feelings of being in a safe space and so more able to provide for the needs of the child or children in their care. The reports suggested that caregivers appreciate practitioners who are perceived as people who could manage the group dynamics (in the context of group interventions, as shown above), or convey the required knowledge concerning the intervention delivery. Practitioners were also appreciated when they persevered in engaging caregivers in the interventions:

> "I needed that reassurance … 'You are doing everything right, just persevere'. I needed that, like somebody to tell me, 'Yes, you are doing right' … 'cos sometimes I thought well I must be doing something wrong."
> – Beresford et al., 2016, p.8

Besides this feeling of "being cared for" by other people, caregivers seemed to appreciate parenting interventions as an opportunity to take care of themselves.

> "So actually having somebody there saying to you 'are you making time for yourself and are you having some exercise?'"
> – Whiting et al., 2019, p.5

This stress on the importance of being encouraged to "take care of oneself" was described within the specific context of caregivers of children with disabilities. Studies demonstrated that, by attending to the child's needs, these caregivers in some cases could be at risk or overlooking their own wellbeing. Hence, when caregivers felt that a parenting intervention emphasised this aspect and promoted care and self-care, this was generally regarded as highly valuable.

Confidence in synthesised theme 1.4: high

Synthesised theme 1.5: The value of wider family and network involvement

Finding statement: Interventions are perceived to work better if the wider family and network get involved.

The fifth and final synthesised theme under this domain refers to the involvement of the wider family and network in their lives. Informed by 31 studies, this theme illustrates that support and coordination with wider networks (such as schools and health professionals) and family (such as siblings, grandparents, or extended family) is crucial for engagement and effectiveness.

Although some parenting interventions worked only with the immediate caregivers, the studies made clear that others also involved work with a wider network of people around the child, including school staff and other family members. The studies indicate that having the wider network actively involved in the interventions can lessen the burden on families:

> "I think it was great that the schools participated in it too – it took the pressure off us, feeling you had to do it as part of homework."
> – Patton & Hutton, 2016, p.271

This seems to be particularly relevant when families feel overwhelmed and burdened by parenting duties alongside "normal" life stressors. Besides alleviating the weight on families, this collaboration was felt by caregivers to promote a positive sense of teamwork in supporting families:

> "And that's what I liked about this, you have, you get more of a feeling that you are really all doing it together, and so, you all think: right, this is it; we are going to get this done for the next eight weeks."
> – Verhaegh et al., 2022, p.6

This collaboration is also significant in the cases in which the children require multidisciplinary support. For instance, when children require recurring medical assistance studies reported that caregivers felt it was important for health professionals to also engage in the intervention:

> "One of the advantages was my GP actually listened to me after. When I said to them that I came to this programme the GP actually gave me what I wanted, because he knew what I was talking about."
> – Ersser et al., 2013, p.634

Confidence in synthesised theme 1.5: Moderate

Domain 2: Barriers to acceptability and engagement in parenting interventions

The second domain concerns barriers to acceptability and engagement with parenting interventions and is a counterpart of the first domain. It was informed by 92 out of the 115 studies and is also formed by five themes: 1) practical and logistical challenges; 2) it is scary to try new things; 3) a mismatch with the caregivers' needs; 4) 'that's the problem with groups'; 5) parenting interventions don't work in isolation.

Synthesised theme 2.1: Practical and logistical challenges

Finding statement: Parents and carers frequently face practical and logistical difficulties when attending and engaging with parenting interventions.

This synthesised theme was informed by 67 studies and described practical and logistical difficulties when attending parenting interventions and trying to implement what they had learned from these interventions. It is broadly a counterpart of synthesised theme 1.1 and indicates that caregivers may struggle to handle an intervention's demands alongside their other life commitments.

> "I only have so much time and energy."
> – Hladik et al., 2024, p.8

In these cases, caregivers are already overwhelmed by life duties and committing to intervention strategies may feel excessive. This is also important to be examined with an intersectional lens. In the case study reported by Solis et al. (2004), focused on the experience of an African American mother of a child with "moderate expressive and receptive language disorder" who attended an intervention to help her learn how to use play with her child, the caregiver spoke about being a single working mother of three children. According to this mother, that context hindered her willingness and potential to commit to the intervention. Along similar lines, it is worth noting that some prescribed tasks within a parenting intervention can hinder engagement:

> "I think the trickier things are to do, or more laborious they are to do, the less likely you are to do them."
> – Botterill et al., 2019, p.96

Another issue identified by the studies was the practical aspects of the involvement of male caregivers. Reflecting the predominantly female participants in these qualitative studies, the caregivers attending the interventions were generally described as being other women and mothers. Studies reported that caregivers often struggled to find ways to involve fathers in implementing what they were learning from the interventions, especially if their partner hadn't been involved with the intervention:

> "Like obviously I am not the only parent in the house and whilst I would try and explain what I was trying to do to [my husband], he wasn't as in to it as I was. So I think if you could get both parents involved that could be helpful."
> – Williams et al., 2016, p.66

Finally, a prominent practical barrier identified was technology-related issues, primarily in the context of online parenting interventions:

> "[I] Enjoyed it but found it extremely distracting when others had a bad connection … "
> – Luberto et al., 2021, p.6

The technology-related obstacles were not only related to online interventions, or to do with internet access. For example, caregivers also spoke about the challenge when devices tailored for a specific intervention were faulty (e.g. speech-generating devices). In such cases, such practical obstacles were likely to reduce the likelihood of engaging in the intervention, or in implementing what had been taught.

Confidence in synthesised theme 2.1: high

Synthesised theme 2.2: It is scary to try new things

Finding statement: Parenting interventions can be scary for carers at first, because they may be asked to engage with unfamiliar activities.

This theme mainly concerns the initial stages of the parenting interventions and is related to caregivers' fears and anxieties about the interventions, including the interventions' characteristics but also their own capacity to effectively engage. It was informed by 37 studies.

Studies suggest that many parents are referred to parenting interventions right after receiving a diagnosis for their child. Even when not dealing with such significant changes in one's life, engaging with a parenting intervention can feel overwhelming and scary:

> "In this whole process of trying to get into therapies, I had no idea about anything. This was all new to me … it was like one minute to the next."
> – Amsbary et al, 2020, p.50

Besides focusing on engaging with the intervention itself, caregivers may be processing the feelings involved with the diagnosis and might be overwhelmed by other tasks and life changes that are not directly related to the interventions. In some cases, these feelings seem to reflect fear of judgement or feelings of shame or stigma:

> "I think the first couple of times [at the parenting intervention] were kind of scary cause you're like 'wait, what does this person think of me,' you know, 'are

> they going to judge me,' you know?"
> – Carr & Lord, 2016, p. 19

As illustrated by previous synthesised themes (e.g. themes 1.2 and 1.3), caregivers of children with disabilities might feel isolated in their experience, and these feelings might be heightened by the time of receiving the diagnosis. Fears and anxieties about engaging with a parenting intervention are especially frequently reported in studies where caregivers were interviewed about their experience of interventions involving video feedback. By being video-recorded and then discussing their child–caregiver interactions with a professional, caregivers often felt put under scrutiny and scared of judgement and questioned their caregiving skills. However, this fear seems to be overcome over time where caregivers engage with a video-feedback intervention, provided that the facilitators created a context of non-judgemental support (e.g. Amsbary et al., 2020; Leadbitter et al., 2020).

Confidence in synthesised theme 2.2: moderate

Synthesised theme 2.3: A mismatch with the caregivers' needs

Finding statement: Parents and carers perceive that some interventions are not a good fit for their needs or context and that practitioners might offer inadequate support.

This synthesised theme was informed by 78 studies, making it the most common in this domain. It reflects that caregivers appreciate that some intervention characteristics that could work for others might not attend to their specific needs. In some cases, this "mismatch" seems to be due to the intervention not catering for caregivers' individual needs or interests:

> " (…) but on the other hand it was hard for me to notice the emotions of the other parents in the group during the online sessions. It felt if we were less connected with each other."
> – de Korte et al., 2022, p.5423

In addition to the interventions not necessarily catering to caregivers' needs, some reports describe interventions that are not perceived as a good match to the child's needs.

> "It's hard to get him to sit for that long and do blocks. Besides, he likes to line them up and play different."
> – Carr & Lord, 2016, p.19

This indicates that the expectations from the interventions were at times not aligned with the child's specific interests or level of functioning. This, in turn, could affect parent engagement and hinder the intervention's impact. Lastly, the findings indicate that some caregivers question the intervention focus, wishing for different directions:

> "Sometimes you just want to be like any other family and enjoy something positive rather than being constantly focussed on the most negative aspects of your life."
> – Botterill et al., 2019, p.96

In this context, although some caregivers appreciate the opportunity to discuss what is going badly in their lives, others report wanting to address positive aspects, such as working on positive life goals.

Many studies that contributed to this theme illustrated interventions that were not seen as a "good fit" for specific caregivers. However, in some other cases in this theme the intervention format was not seen as the problem, but rather the *way* it was delivered, such as the availability of support in carrying out tasks and checking in on the family:

> "There was no extra support there, nobody sort of said 'Oh we can come out and monitor how he goes to sleep at night, or go through with you how you put a sleep routine together' (…) maybe that could have helped."
> – Sutton et al., 2019, p.170

Confidence in synthesised theme 2.3: high

Synthesised theme 2.4: 'that's the problem with groups'

Finding statement: Some parents and carers struggle with different facets of the group format, for different reasons.

Twenty studies informed this synthesised theme, all of which involved caregivers' experiences of a range of group-based parenting interventions. Firstly, caregivers notice and can be concerned about differences in engagement among attendees, with some being perceived as more committed than others. These gaps also seem to have the potential to impede caregivers from effectively connecting with each other.

> "I think it was hard to get to know people who only came to 2 or 3 or 4 of them."
> – Hock et al., 2015, p.3378

Other recurring issues reported concerning engagement were some caregivers not opening up during the meetings or not doing the assigned homework. The issue of "impersonality" was also discussed in relation to group sizes, with groups perceived as "too large" leaving participants feeling more disconnected.

Although some caregivers appreciated having a shared experience with other caregivers (synthesised theme 1.3), and having a sense that despite having children with different disabilities they were in "the same boat", for some the group format, especially when it involved caregivers of children with quite different kinds of disabilities, was seen negatively:

> "[My daughter] doesn't have a physical disability, so some of the issues that the other parents had, which much more related to maybe a child that has a physical disability … so I got bored. … And some of the issues weren't really that important to me. … I just wasn't that interested."
> – King et al., 2020, p.1624

This was not only mentioned in terms of their children's disabilities, but also other factors such as the children's age. Hence, this indicates that some caregivers struggle with interventions that are more mixed in terms of participants.

Finally, the studies report on some caregivers' views of group interventions as "demoralising", or a "crying match" (Jackson et al., 2018, p.4212).

> "Nothing but a bunch of whining and complaining."
> – Jackson et al., 2018, p.4212

As described in synthesised theme 2.3, some caregivers might want to focus on more positive aspects of parenting or at least not exclusively focus on difficulties. In some cases, a focus on what was difficult could be perceived as "whining", which was experienced less as a sharing of common experiences, and more as something that distanced these participants from others in the group.

Confidence in synthesised theme 2.4: Moderate

Synthesised theme 2.5: Parenting interventions don't work in isolation

Finding statement: Parenting interventions are limited when other services or wider network are not cooperative or "work against" them.

The last synthesised theme under the 'barriers' domain concerned caregivers' perceptions of interventions being limited when other services or the wider network are not cooperative with what the parenting intervention is trying to do, or actively "work against" them. This theme was informed by 31 studies.

This theme appeared most commonly in studies in the context of schools, where caregivers reported that the school would not adapt to the child's needs and sometimes work against what was advised by the parenting interventions:

> "There's this constant tension between people [at the school] saying he doesn't understand, and then [the parenting intervention] continually rising up your expectations … so it's a bit difficult to be pulled apart like that."
> – Anderson et al., 2014, p.78)

These findings seem to portray caregivers in a sort of "tug of war" between different people in their children's lives. For instance, when trying to adopt a sleep management programme suggested as part of a parenting intervention for children with neurodevelopmental disabilities, they might struggle to get their partners (either cohabiting ones or not), or grandparents to adopt the recommended practices (Beresford et al., 2016).

Having an articulated support is especially crucial for caregivers of children with specific disabilities that inherently require multidisciplinary care. While the studies illustrate the importance that caregivers place on having different professionals supporting families, they also provide evidence that caregivers often feel that different professionals need to work in a coordinated way:

> "I think if they started doing more of a multidisciplinary model … then everyone would be aware of what the other therapists were putting on the family … "
> – Anderson et al., 2014, p.80

When describing “disjointed” support, these studies suggest that the different tasks or recommendations given by parenting programmes might “build up” and become overwhelming, becoming unmanageable.

Confidence in synthesised theme 2.5: moderate

Domain 3: Intervention impact

The third domain concerns caregivers’ views on the impact of parenting interventions in the context of parenting a child with a disability. This domain was informed by 104 of the 115 studies included in this meta-synthesis. Meta-synthesis of these findings led to the development of the following themes: 1) ‘The intervention helped me, so I could better help my child’; 2) ‘Things are better, but I can’t say why’; 3) ‘It isn’t just us, the family has changed too’.

Synthesised theme 3.1: ‘The intervention helped me, so I could better help my child’

Finding statement: Parents and carers appreciate changes in themselves, even when the intervention is focused on tackling the child’s problems and difficulties, and pass the changes onward.

This synthesised theme was contributed to by 96 studies, the largest number in this domain. It captures the way that caregivers felt that parenting interventions had influenced them as caregivers. Despite many interventions being focused primarily on training the parent to deal with challenges arising from their child’s disability (e.g. parent-delivered and parent-mediated interventions), caregivers reported and commented more often about changes in themselves more broadly, not only in relation to how they cared for their children.

At the initial stages of the intervention, one important impact for caregivers was actually noticing that they needed help or at least recognising some aspects of their lives or routines that might need to change:

> “The first two weeks, I was like ‘why am I doing this? I’m fine’. But actually no … I realised that I was not fine. I needed more sleep, to get my anger and frustration down, I needed more water … I realised I was binge eating at week 2 … But after week 3 I probably started taking note of how we are eating and what I’m eating.”
> – Harris et al., 2022, p.669

As mentioned in theme 1.4, studies reported that caregivers of children with disabilities often find that their whole identity can become caught up in being a care provider and that can at times make them stop attending to their own needs. It seems that many caregivers feel that the first impact of attending a parenting intervention is to make them aware of this and consider finding ways to tackle it.

Over time, other positive changes are perceived by caregivers. The most frequently described concerned becoming more patient, understanding, and seeing the world “through the child’s eyes”:

> “I put my eyes behind [child’s name]’s eyes and I just imagine for a minute that I am in [child’s name]’s little head and try and look at it from his angle … and you

> probably react totally different to the way you would initially react, because you have looked at it from his point of view."
> – Leadbitter et al., 2020, p.2135

This acquired or improved capacity seemed to increase caregivers' ability to manage their emotions, which in turn they felt impacted their parenting behaviours. Studies described caregivers reporting that they were less likely to act out when facing difficult situations with their children, as a result of attending a parenting intervention. Potentially related to this change, the studies report that caregivers of children with disabilities that led to "difficult" behaviour, especially when in public, felt that the interventions had helped alleviate feelings of shame regarding the child's behaviour or differences from an expected 'norm':

> "We both concluded that it was important to listen to our child's needs and work very hard on it, regardless what it's called or what other people think of it."
> – de Korte et al., 2022, p.5422

Therefore, the interventions served as an opportunity for many caregivers to develop a sense of wider acceptance of their children. This was seen as particularly important for cases in which caregivers would perceive or experience judgement from others in relation to their child's disability.

Finally, studies showed that what caregivers learned from attending a parenting intervention could be shared with other people, such as relatives or professionals who work with the child:

> "I have learned how to incorporate the strategies into everyday tasks.; I have even shared this information with his grandparents who also spend quite a bit of time with him … "
> – Garnett et al., 2022, p.11

This suggests that the impact on caregivers has the potential to be 'multiplied', leading to more consistent and coordinated support.

Confidence in synthesised theme 3.1: high

Synthesised theme 3.2: 'Things are better, but I can't say why'

Finding statement: Parents appreciate changes in their children but are not always sure whether the improvements (if any) are due to the intervention.

Sixty-five studies described changes perceived by caregivers in the child as a result of them attending a parenting intervention. The meta-synthesis of these qualitative findings indicates that caregivers overall had positive views on the interventions' impact on their children, as a result of sometimes quite small changes in their caregiving behaviours:

> "There was just a single route that she wanted to take [to school]. One of the specific successes for me was I started introducing slight differences in route and that worked. When we were home during the lockdown and even subsequently, we used to go for walks and it was good to see that she continued saying 'Let's

> explore a new route.' So that has been a very positive thing."
> – Palmer et al., 2023, p.564

These studies mention improvements in a variety of domains, such as children throwing fewer tantrums, feeling less anxiety, and in other ways that might be specific to the nature of their child's disability (e.g. improvement in social communication skills in autistic children). In most cases, studies suggest that caregivers felt that these changes – even if only small or partial – were in response to something they themselves had begun to do differently, or something they had learned as part of the parenting intervention:

> "I feel like a lot of the anxieties that [child] has are related to the fear of uncertainty. So even if we didn't quite conquer the fear completely … we at least have some tools to help him deal with that. And I think it did build up his confidence a bit in himself that he can tolerate some of that."
> – Keefer et al., 2024, p.136

Although studies reported far more about the positive impact of attending a parenting intervention, in some cases caregivers expressed a view that interventions did not promote change in their children.

> "I'm still kinda on the fence (regarding early intervention) because I don't see a whole lot of change … He still has tantrums, he still doesn't talk, he says weird sounds all the time and like 'arrggh' he does use the odd picture and stuff a lot more, his cards. I think that's pretty good, but he still doesn't really say many words."
> – Patterson & Smith, 2011, p.338

In these reports, it was noticed that the subjective experience of impact was at times related to caregivers' expectations before attending the intervention. Where caregivers attended hoping for a "miracle" (e.g. Pattison et al., 2022), they were more likely to feel disappointed in what the intervention had given, whereas more realistic or modest expectations generally led to greater satisfaction.

Finally, some parents also acknowledged that changes in their children had been seen, but might not have been due to the intervention. Especially in the context of a growing child, studies showed that caregivers were not always sure how to disentangle the impact of a parenting intervention from other factors:

> "Um, well, his communication, I mean he started to talk so that was a big thing, but that could have been his age, you know, it's very hard 'cos he was so young."
> – Leadbitter et al., 2020, p.2136

Confidence in synthesised theme 3.2: high

Synthesised theme 3.3: 'It isn't just us, the family has changed too'

Finding statement: Changes in parents and children tended to affect family dynamics in positive ways, although some struggles were identified.

The qualitative studies of caregivers' views on the impact of attending a parenting intervention mostly focused on the impact on caregivers themselves, and through them on their children. However, their findings also demonstrated that there could be an impact on the wider family. This synthesised theme was informed by 55 studies and illustrates the various ways in which attending a parenting intervention could impact those in the family. For instance, as expected, changes in a caregiver most directly impacted the child–caregiver relationships:

> "My relationship with my son is calmer, less argumentative, more positive and controlled."
> – Ipekci et al., 2024, p.5

These improved relationships could in turn create a "virtuous circle", so that an improved child–caregiver relationship had a positive impact on other parts of the family, such as between a caregiver and their partner. One mother of a child with diabetes, who received a video-based telemedicine intervention, said:

> "And I went through the [intervention], and I learned what I learned, it's like, I no longer blame my husband if her blood sugar's out of range, because you know what? She has diabetes, and we're not a pancreas. We're only people."
> – Marker et al., 2020, p.29

These findings illustrate that caregivers can develop a better sense of collaboration among themselves as the result of a parenting intervention, even if only one of them has attended. Caregivers spoke about increased understanding of each other and reducing blaming dynamics. Likewise, a change in one part of the family could have wider impact (e.g. on sibling relationships):

> "I had all four of them [siblings] playing the other afternoon for about two or three hours. There was no fighting … all of them are interacting really well together. So the boys had it rub off on them as well which is good."
> – Allan et al., 2018, p.265

All these factors drawn from qualitative findings suggest that parenting interventions' impact can resonate within and across the wider family context, benefiting relationships and people in the family who did not necessarily directly attend the intervention, or who were not the primary focus of that intervention.

Confidence in synthesised theme 3.3: high

Confidence in qualitative findings

We used the GRADE-CERQual approach to assess the confidence in each of the synthesised themes. The evidence profiles indicate that nine of the findings can be viewed with a high degree of confidence, and four with a moderate degree of confidence (see Table 11). The overall high confidence in the findings in this review is due to the high quality of the primary studies included, but also the high volume of papers included in this review: the studies assessed as "low quality" were always accompanied or supported by several other "high-quality" ones. Therefore, no finding was supported only by poor data. All synthesised themes included interventions delivered to caregivers of children with a wide range of disabilities, and all themes included UK-based studies.

No synthesised themes were assessed as having issues concerning relevance and coherence. All themes showed moderate concerns considering methodological limitations, due to the overall lack of description locating the researcher culturally or theoretically or addressing the influence of the researcher on the research, and vice versa. Finally, four themes were rated as having moderate adequacy issues. This was because they either lacked a more widespread support by primary studies (e.g. not as many studies informed the theme) or lacked more richness of detail in their description (e.g. the primary studies did not present sufficient data or interpretation to support this finding). For the full GRADE-CERQual assessment, see Appendix C4 Table 4 'Full GRADE-CERQual assessment for qualitative findings'.

Table 11. GRADE-CERQual assessment of confidence in the evidence summary

Theme	Finding statement	CERQual assessment of confidence in the evidence	CERQual assessment of confidence in the evidence
1.1: The importance of accessibility and convenience	Practical accessibility and convenience factors play an important role in facilitating acceptability and engagement.	High	This finding was graded as high confidence because of the richness of the data, and there were only moderate concerns regarding methodological limitations.
1.2: One size does not fit all: caregivers experience different interventions as catering to their needs	There isn't one-size-fits-all; different types of parenting interventions will suit different carers' needs.	High	This finding was graded as high confidence because of the richness of the data, and there were only moderate concerns regarding methodological limitations.
1.3: The value of sharing experiences	Parents and carers appreciate having a sense of a shared experience with others, and also sharing their own experiences, leading to feeling "normal" or less stigmatised.	High	This finding was graded as high confidence because of the richness of the data, and there were only moderate concerns regarding methodological limitations.

Theme	Finding statement	CERQual assessment of confidence in the evidence	CERQual assessment of confidence in the evidence
1.4: The importance of being cared for and promoting self-care	Parents and carers appreciate being cared for by practitioners or peers and also appreciate opportunities to take care of themselves.	High	This finding was graded as high confidence because of the richness of the data, and there were only moderate concerns regarding methodological limitations.
1.5: The value of wider family and network involvement	Interventions are perceived to work better if the wider family and network get involved.	Moderate	This finding was graded as moderate confidence because of the data relevance and coherence. However, there were concerns about methodological limitations and richness of detail in the studies included.
2.1: Practical and logistical challenges	Parents and carers frequently face practical and logistical difficulties when attending and implementing parenting interventions.	High	This finding was graded as high confidence because of the richness of the data, and there were only moderate concerns regarding methodological limitations.

Theme	Finding statement	CERQual assessment of confidence in the evidence	CERQual assessment of confidence in the evidence
2.2: It is scary to try new things	Parenting interventions can be scary for carers at first, because they may be asked to engage with unfamiliar activities.	Moderate	This finding was graded as moderate confidence because of the data relevance and coherence. However, there were concerns about methodological limitations and richness of detail in the studies included.
2.3: A mismatch with the caregivers' needs	Parents and carers perceive that some interventions are not a good fit for their needs or context and that practitioners might offer inadequate support.	High	This finding was graded as high confidence because of the richness of the data, and there were only moderate concerns regarding methodological limitations.
2.4: 'That's the problem with groups'	Some parents and carers struggle with different facets of the group format, for different reasons.	Moderate	This finding was graded as moderate confidence because of the data relevance and coherence. However, there were concerns about methodological limitations and richness of detail in the studies included.
2.5: Parenting interventions don't work in isolation	Parenting interventions are limited when other services or wider network are not cooperative or "work against" them.	Moderate	This finding was graded as moderate confidence because of the data relevance and coherence. However, there were concerns about methodological limitations and richness of detail in the studies included.

Theme	Finding statement	CERQual assessment of confidence in the evidence	CERQual assessment of confidence in the evidence
3.1: 'The intervention helped me, so I could better help my child'	Parents and carers appreciate changes in themselves, even when the intervention is focused on tackling the child's problems and difficulties and pass the changes onward.	High	This finding was graded as high confidence because of the richness of the data, and there were only moderate concerns regarding methodological limitations.
3.2: 'Things are better, but I can't say why'	Parents appreciate changes in their children but are not always sure if the improvements (if any) are due to the intervention.	High	This finding was graded as high confidence because of the richness of the data, and there were only moderate concerns regarding methodological limitations.
3.3: 'It isn't just us, the family has changed too'	Changes in parents and children tended to affect family dynamics in positive ways, although some struggles were identified.	High	This finding was graded as high confidence because of the richness of the data, and there were only moderate concerns regarding methodological limitations.

DISCUSSION

Key findings for the research questions and objectives

The aim of this review was to evaluate the effectiveness of parenting interventions for parents and carers of children with disabilities. To achieve this, the review involved a number of stages: first to synthesise existing systematic reviews, to provide a consolidated understanding of parenting interventions' effectiveness for parents/carers and children and young people with disabilities (an 'umbrella review'); second, to assess the impact of these parenting interventions on child and parenting outcomes across different contexts, drawing on data from RCTs identified in the umbrella review (meta-analysis); third, to identify specific components and practice elements of parenting interventions that are associated with effective outcomes for these populations, drawing on data from the RCTs identified in the umbrella review (meta-regression); and last, to explore the experiences of parents and carers of a child or young person with a disability, who have engaged in parenting interventions, to provide an understanding of what supports or limits engagement, acceptability, and effectiveness (meta-synthesis).

For the umbrella review, 106 systematic reviews were identified as meeting the inclusion criteria. In summary, the umbrella review found that parenting interventions in general showed evidence of effectiveness in a range of domains: significant improvements in behavioural management, communication skills, and psychosocial functioning across various child populations, including those children with ASD, ADHD, developmental disabilities, and chronic medical conditions. For example, parent-mediated programmes, such as those targeting ADHD symptoms, consistently reported being associated with reduced behaviours that challenge the caregivers and enhanced emotional regulation, and parenting interventions focusing on ASD yielded notable improvements in expressive and receptive language skills through interactive and play-based strategies. Most systematic reviews reported positive effects on parenting outcomes, such as reduced stress levels, enhanced parental competencies, and improved parent–child interactions. For example, behavioural parent training (BPT) and similar structured programmes were particularly effective in building parental knowledge, confidence, and self-efficacy.

The effectiveness of parenting interventions for children with a disability was further examined, based on extracting data about individual RCTs from the systematic reviews, where appropriate data was available. A meta-analysis pooling data from 213 RCT studies found that parenting interventions, on average, had a positive effect on child-related outcomes (SMD=0.43, 95% CI=0.37 to 0.49; I^2=80%), and data from 108 studies demonstrated similarly positive effects on parent-related outcomes (SMD=0.40, 95% CI=0.31 to 0.50; I^2=75%). These effects remained consistent after excluding studies at high risk of bias or low quality. However, prediction intervals suggest that effectiveness varies considerably across different interventions and contexts. For child-related outcomes, the 95% prediction interval ranged from –0.22 to 1.08, indicating that although most interventions are beneficial, some may have minimal or even negative effects in certain settings. Similarly, for parent-related outcomes, the 95% prediction interval ranged from –0.41 to 1.21, further highlighting that the effectiveness of interventions is not uniform across all studies.

Meta-analyses of specific outcome domains confirmed significant improvements across all domains assessed. The GRADE certainty of evidence assessment concluded that there was high-certainty evidence showing that, on average, parenting interventions are effective for improving both child- and parent-related outcomes across all ages and disabilities studied. However, the effectiveness of parenting interventions for child- and parent-related outcomes varied significantly across studies, as indicated by the high heterogeneity observed (80% for child-related outcomes, 75% for parent-related outcomes) and wide prediction intervals.

Sub-group meta-analyses and meta-regressions explored potential demographic factors and intervention components that may have contributed to these differences. For child-related outcomes, younger children (<6 years) benefited most from interventions, with effectiveness diminishing in older age groups, particularly those aged 13 to 25 years. In contrast, parent-related outcomes showed no clear age-related patterns. The type of disability influenced parent-related outcomes, with interventions targeting parents of children with ADHD yielding more positive effects than those focusing on ASD, though the difference was not consistently significant across models. For other factors, such as gender ratio, intervention type, setting, and format, no statistically significant effects were identified, but wide confidence intervals suggested the possibility of moderate to large differences if more data was to be collected. For example, face-to-face and remote interventions showed comparable effectiveness, as did individual versus group formats, though the GRADE assessment indicated low or very low certainty for these findings. The deliverer of the intervention had no clear impact on effectiveness for child-related outcomes, but interventions led by peers appeared less effective for parent-related outcomes, though evidence was of low certainty due to high heterogeneity and limited data.

The findings from the meta-synthesis – examining enablers and barriers to engagement, acceptability, and caregivers' experiences of the impact of parenting interventions – provides an additional perspective. By focusing on the perspective of caregivers themselves, the findings provide indications about what might contribute to more acceptable interventions, and what features might hinder their attendance. One prominent insight from the meta-synthesis is that across different interventions and concerning caregivers of children with different conditions, it is crucial to deliver interventions in a way that is perceived as practical and accessible. However, the findings also suggest that there is no one way of making an intervention accessible: this has to be considered in relation to the caregivers' own contexts and needs.

In addition to accessibility, the meta-synthesis also indicates that there is no one-size-fits-all solution for intervention delivery: formats that are seen positively by some parents (e.g. attending a group intervention that fosters a sense of a shared experience) might be seen negatively by others (e.g. feeling demoralised). Therefore, this indicates that intervention delivery must be considered in the light of 'personalised medicine' – i.e. as something that is offered in consultation with caregivers, making a joint decision on what is the best fit for them.

The meta-synthesis findings also highlight that parenting interventions do not take place in a vacuum, and that families' wider network and environment might impact the effectiveness of the intervention (for better or worse). It is therefore recommended that practitioners delivering parenting interventions are aware of the caregivers' context and try to promote collaboration between different stakeholders (e.g. wider family, schools, other professionals).

Limitations

Limitations of the umbrella review

Umbrella reviews enable researchers to gain an understanding of evidence in relation to a broad topic area, where there is considerable variation in the type of intervention, as well as in the target population. They are useful when a significant number of existing research syntheses (i.e. systematic reviews) have already been published, but the findings of those various systematic reviews have not yet been brought together to provide a comprehensive overview of evidence. By combining an umbrella review with a meta-analysis and meta-regression based on data from individual studies identified in the systematic reviews, alongside a qualitative meta-synthesis of research looking at the experience of parents and carers who have engaged with a parenting intervention, this review offers a wide-ranging summary that draws on multiple types of evidence.

However, umbrella reviewing is still a relatively new methodology, and there are a range of clear limitations to this particular review. A key limitation of conducting an umbrella review is that all data is drawn from the included systematic reviews rather than from the individual primary studies. As a result, we are reliant on how interventions were described and categorised within those systematic reviews, which may differ across sections of this review. Unlike systematic reviews of primary studies, umbrella reviews do not allow for direct extraction of detailed information such as specific intervention names, delivery formats, eligibility criteria, or theoretical frameworks beyond what has been reported in the included reviews. Although we have aimed to provide clarity on intervention types, some variation in terminology across sections reflects differences in the original sources rather than inconsistencies in our reporting. We acknowledge this as an inherent limitation of the umbrella review methodology and have aimed to address it by clarifying our approach in the introduction and footnotes. We also acknowledge that our categorisation of child- and parent-related outcomes was necessarily dependent on the reporting approach taken by each systematic review. As a result, there may be some variation in how specific outcomes were classified across different reviews, which is an inherent limitation of this umbrella review.

As would be expected, for the umbrella review there was high heterogeneity in study designs, intervention protocols, and outcome measures across systematic reviews. The quality of a large proportion of the systematic reviews was rated as low, although this may partly reflect the nature of the AMSTAR 2 rating system, which can lead to a high proportion of reviews being considered to have what are rated as “critical” flaws (Li et al., 2022). When it comes to the reporting of the quality of individual studies included within systematic reviews, many systematic reviews did not employ robust quality appraisal tools, therefore increasing the risk of bias. Common sources of bias among individual studies included in the systematic reviews included lack of blinding and inadequate randomisation. There was also poor standardisation in outcome measures, which reduced the comparability of results, such as for parental stress and adaptive behaviours.

In addition to variability in study design, there was also a high level of variability in the types of populations studied. Reporting within systematic reviews was often patchy, with limited sub-group analyses and stratification of results by age, severity of disability, or other contextual factors that may have obscured nuanced effects. It was also noticeable that demographic information, including socioeconomic status and ethnicity of participants, was often underreported within systematic reviews, limiting the generalisability of findings. Where demographic data was reported, participants were predominantly White and female, and in most cases were mothers.

Limitations of the meta-analysis and meta-regression

With regard to the meta-analysis and meta-regression, which was conducted on data from individual RCTs extracted from the systematic reviews that had been included within the umbrella review, there were several limitations to the evidence presented.

First, as with all meta-analyses, results pooled data across a variety of different outcomes, disabilities, interventions, populations, and contexts. Although we were able to explain some of these differences in effectiveness across studies via factors included in the meta-regression, the residual heterogeneity remained high ($I^2>62\%$), which reflects the fact there were many factors that could not be accounted for.

Second, an assumption was made that the intervention components would have the same effect on children with different types of disability. If, say, face-to-face interventions are more effective for children with one type of disability, and remote interventions are more effective for those with another type of disability, this could lead to minimal difference on average (as we identified). Examining the effect of intervention components for specific disabilities is beyond the scope of this umbrella review but would be valuable for future more focused reviews.

Third, because this is an umbrella review, data was not extracted directly from individual studies, but from systematic reviews that report data from these studies. Therefore, our analyses rely on the original systematic review authors correctly extracting and reporting data from individual studies. Moreover, more recent RCTs published after the most recent systematic reviews included in the umbrella review were not considered in this meta-analysis. This may mean that the findings do not fully represent the entire body of evidence on parenting interventions for children with disabilities. Readers should be aware that this review may not capture all relevant individual empirical studies of parenting interventions for the carers of children with disabilities; it only includes those that were part of a systematic review and in which the authors of the systematic review provided sufficient information for the study to be included in a meta-analysis.

Fourth, we were unable to examine differences in effectiveness based on disability severity, because this was not often reported in reviews. This should be examined in future systematic reviews. Fifth, meta-analysis and meta-regression results should be considered exploratory, because the outcomes used and moderators selected for models were not pre-registered – instead, they were reliant on information provided in the systematic reviews identified.

Another significant limitation of the umbrella review, meta-analysis, and meta-regression is that there were no eligible systematic reviews providing specific data on certain types of parenting interventions or the parents and carers of children with certain types of disability. This does not mean that there are no individual empirical studies examining the effectiveness of other types of parenting interventions and/or for parents and carers of children with other types of disability; rather, it means that there were no eligible systematic reviews on this topic to be included in the umbrella review and, as a result, the relevant data from these studies was not incorporated into the meta-analysis or meta-regression. Hence, the findings of this review may not fully address the specific needs or outcomes related to certain populations.

Limitations of the meta-synthesis

Including a meta-synthesis component in this review provides an important focus on the experience of parents and carers who have engaged with parenting interventions; however, there is a lack of guidance on how best to integrate such qualitative findings with other types of evidence. There are also ongoing debates about the scope of included studies, inclusion criteria, quality assessment, and how best to integrate findings from studies using very different methodologies (Mohammed et al., 2016). This is especially true for a review such as this one, where the focus was on a wide range of different types of parenting interventions, for caregivers of children of different ages and with a broad range of disabilities. As well as the wide variation, the qualitative studies included often lacked description locating the researcher culturally or theoretically or addressing the influence of the researcher on the research, and vice versa. This will impact on how the information can be interpreted and the conclusions drawn.

In addition, few studies reported including caregivers who were not biological parents (e.g. grandparents, siblings, foster and adoptive parents). These were underrepresented in the studies, and many studies did not make it clear what type of caregiver was receiving the intervention. And even in those few studies that included caregivers who were not biological parents, their perspectives were always presented alongside other caregivers, making it unclear how their specific point of view might differ from biological parents'.

Family configuration and socioeconomic status were not systematically reported in the individual studies. That limits our understanding of issues such as the impact of wider family and network involvement in the success of parenting interventions, which was raised as an important factor in the synthesised findings. The current evidence might highlight the need for additional support especially for lone caregivers, who might be deprived of support and experience complex difficulties (e.g. financial difficulties). However, the studies identified in the meta-synthesis did not provide detail to gauge the specific perspectives of lone caregivers or caregivers living in poverty.

Finally, ethnicity of participants was not systematically reported but, when it was, most studies reported their participants as "White", suggesting that the experience of caregivers from ethnic minorities might be underrepresented in these studies. Additionally, most studies that reported on the caregivers' ethnicities did not provide any specific differences among caregivers from ethnic groups. This indicates that these studies might have focused on the common experiences between these caregivers, with the potential risk of "washing out" particular experiences. This highlights the importance of further studies addressing parenting interventions from the perspective of caregivers from minoritised ethnic backgrounds.

Considerations around equality, diversity, inclusion, and equity

Across the 106 systematic reviews in the umbrella review, the diversity in the types of disabilities examined is a strength – it reflects the broad range of conditions for which parenting interventions have been considered and applied. However, in those systematic reviews there were notable gaps in reporting on demographic characteristics. For example, there was a slight predominance of male children, especially in studies focusing on conditions like ADHD and ASD. This gender imbalance could reflect the higher prevalence of these conditions among boys, but it also suggests that more attention is needed to understand parenting interventions for children with different genders, including non-binary children, and to ensure that interventions are effective across genders. In the meta-regression, we were able to examine whether the effectiveness of interventions differed based on the gender ratio of children in the study. However, there was insufficient data reported on ethnicity for this to be examined. This limited reporting restricts our ability to understand how these interventions perform across diverse populations and raises concerns about the generalisability of the findings. Addressing these gaps in future research (and in the reporting of those studies within systematic reviews) is essential to ensure that parenting interventions are effective and equitable for all children and families.

Finally, on the meta-synthesis, we highlight that the findings were mainly drawn from the experience of female caregivers, and that there were significant gaps in the reporting of other types of caregivers (e.g. sibling caregivers, kinship carers). Therefore, we do not know how the meta-synthesis results reflect the experiences of the caregivers who are less often represented in the literature. Similarly, the primary studies included in the meta-synthesis were not consistent in reporting on caregivers’ ethnicity and socioeconomic status. Additionally, most of the studies that reported this information presented their results in ways that meant it was not possible to identify how specific experiences are related to specific ethnic or socioeconomic backgrounds. Hence, future qualitative studies focusing on these characteristics will be fundamental to shed light onto caregivers’ specific needs and for the development of better tailored interventions.

Recommendations and next steps – policy and practice

The findings from this review have several important implications for policy and practice:

- Overall, the review provides evidence for the effectiveness of a range of types of parenting interventions, delivered in different formats and settings, by different practitioners, for parents and carers of children with a range of different types of disability. The effectiveness was also demonstrated across a range of outcome domains. Although the quality of evidence was variable, overall, there is clear evidence that parenting interventions are effective for these groups. Also, the evidence shows that a range of approaches can be helpful, and that parenting interventions should be considered as a first line of support for parents and carers of children with a wide range of disabilities.
- More specifically, parenting interventions targeted at younger children (<6 years) appear to be the most effective, with the effectiveness of parenting interventions on child-related outcomes decreasing as the child’s age increases, especially for children and young people aged 13 to 25. However, the difference in effectiveness of parenting interventions across age groups was not found with regard to parent-related outcomes, such as parenting stress. This suggests that parents and carers of children of all ages may be helped by parenting

interventions, but the impact of those interventions on a range of child-related outcomes may decrease, emphasising the importance of early intervention.

- With regard to parent-related outcomes, there was some evidence that parents and carers of children with ASD did not benefit from parenting interventions as much as parents of children with ADHD. This suggests that there may be a need to do further work to ensure that parenting interventions for parents and carers of children with ASD are adapted to address the specific needs of this group of caregivers.
- Although both face-to-face and remote interventions were found to be equally effective on average, future interventions should consider the specific contexts and needs of the families they aim to support. There is no ‘one-size-fits-all’, and services should be able to provide a ‘personalised’ approach, which takes into account the specific needs and preferences of children and their caregivers.
- Furthermore, peer-led interventions, though widely used and often appreciated by parents and carers, may require refinement to improve effectiveness for parent-related outcomes.
- Ultimately, practitioners should focus on customising intervention approaches to the specific demographic, developmental, and disability-related factors that influence outcomes.
- Parenting interventions should be tailored to address the specific needs of children and their families, accounting for age, type of disability, and cultural context – for example, flexible delivery formats, including telehealth and home-based programmes, can improve accessibility for diverse populations.
- Parenting interventions should be mindful of, and consider how they can have an impact on, the wider network around children and caregivers, such as other members of the family, teachers etc.
- Establishing clear, standardised intervention protocols will enhance consistency and replicability across practice settings and in research studies, increasing confidence in the quality of evidence.

Recommendations and next steps – research

For future research, consistent use of validated outcome measures will facilitate comparability and synthesis of findings across studies. Moreover, long-term follow-ups are essential to evaluate the sustainability of intervention effects and guide future research. When it comes to systematic reviews, greater emphasis on examining and reporting on family dynamics, socioeconomic influences, and co-parenting relationships will provide a more holistic understanding of intervention impacts. In particular, inclusion and reporting of underrepresented groups in research are critical to developing equitable and generalisable interventions.

Future research should focus on addressing the high heterogeneity in intervention effectiveness observed in the meta-analysis and meta-regression part of review. It is crucial to conduct more focused reviews that examine the specific components of interventions, such as delivery format, length, and content, to better understand which factors contribute to success across different child disabilities. There is a need for further high-quality studies to clarify the impact of specific intervention components. Research should also explore the mechanisms underlying age-related differences in intervention outcomes, particularly why younger children may benefit more than older age groups, to design more age-appropriate interventions. Additionally, further high-quality RCTs are needed to compare different intervention formats (e.g. remote vs face-to-face) and assess them in diverse populations. Further research could explore the cost-effectiveness of different intervention models, which would influence how widely they could be implemented in practice. Lastly, future studies could benefit from reporting results separately for important demographic sub-groups (e.g. by ethnicity), to ensure there are no inequalities in the effectiveness of certain types of interventions across diverse populations.

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ACCESSIBILITY TEXT

Figure 1. PRISMA flow diagram of the Study Selection Process in the Umbrella Review

The image is a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram, depicting the process of identifying, screening, and including studies in a systematic review. The PRISMA flowchart systematically tracks the progression from identification to final inclusion, showing how studies were filtered and excluded at each stage.

Below is a breakdown of the flowchart:

1. Identification

Records identified from databases/registers: 20321

- Embase: 9924
- Medline: 5844
- PsycInfo: 3634
- PubMed: 698
- Citation searching: 221

Records removed before screening: 6514

- Duplicates identified manually: 58
- Records identified by Covidence: 6456

2. Screening

Records screened based on title and abstract

- Records excluded: 12915

Full text records assessed for eligibility: 892

- Reports excluded: 784
    - Not a systematic review: 443
    - Poster/Conference Abstract: 59
    - Ineligible Age Range: 55
    - Not a Parenting Intervention: 51
    - Risk of Developing Disabilities: 31
    - Ineligible Outcomes: 30
    - Ineligible Country: 15
    - Not in English: 6

- Protocol: 5
- Dissertation: 2
- Inaccessible: 2

3. Included

Records included in review: 106

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Figure 2. Pooled effect of parenting interventions across specific types of child- (213 studies overall) and parent-related (108 studies overall) outcomes

This image shows a summary of the pooled effect sizes of parenting interventions, separated into child-related and parent-related outcomes. It displays how strongly these interventions favour either the intervention group or the control group across different outcome types. The image shows two forest plot style graphs, one for child-related outcomes and one for parent-related outcomes. The x-axis runs horizontally from -0.50 to +0.75. A vertical dashed line at 0 represents no effect. Each row represents a different outcome category, with a dot representing the pooled effect estimate for that outcome and a horizontal bar representing the confidence internal around the pooled effect estimate. Outcomes with negative values favour the control, and outcomes with positive values favour the intervention.

A: Pooled effect of parenting interventions on child-related outcomes by outcome-type

- Overall: Positive effect of 0.43 (confidence interval of 0.37 to 0.49)
- Behavioural: Positive effect of 0.47 (confidence interval of 0.39 to 0.55)
- Disability-specific: Positive effect of 0.34 (confidence interval of 0.25 to 0.44)
- Language and communication: Positive effect of 0.36 (confidence interval of 0.26 to 0.47)
- Child development and cognitive skills: Positive effect of 0.22 (confidence interval of 0.07 to 0.36)
- Social skills and interaction: Positive effect of 0.42 (confidence interval of 0.23 to 0.62)
- Emotional and psychological: Positive effect of 0.33 (confidence interval of 0.13 to 0.53)

All outcomes show confidence intervals that do not cross zero, indicating statistically significant positive effects favouring intervention.

B: Pooled effect of parenting interventions on parent-related outcomes

- Overall: Positive effect of 0.40 (confidence interval of 0.31 to 0.50)

- Parenting practices: Positive effect of 0.52 (confidence interval of 0.31 to 0.74)
- Parent–child interaction: Positive effect of 0.40 (confidence interval of 0.20 to 0.61)
- Parental stress: Positive effect of 0.39 (confidence interval of 0.24 to 0.54)
- Parental well-being: Positive effect of 0.34 (confidence interval of 0.13 to 0.55)
- Parenting efficacy: Positive effect of 0.20 (confidence interval of 0.08 to 0.32)

All outcomes show confidence intervals that do not cross zero, indicating statistically significant positive effects favouring intervention.

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Figure 3. Disability-specific pooled effect of parenting interventions on child- (213 studies overall) and parent-related (108 studies overall) outcomes.

This image shows a summary of the pooled effect sizes of parenting interventions on children and parent carers by different disability-types, separated into child-related and parent-related outcomes. It displays how strongly these interventions favour either the intervention group or the control group across different disability types. The image shows two forest plot style graphs, one for child-related outcomes and one for parent-related outcomes. The x-axis runs horizontally from -0.50 to +0.75. A vertical dashed line at 0 represents no effect. Each row represents a different outcome category, with a dot representing the pooled effect estimate for that outcome and a horizontal bar representing the confidence internal around the pooled effect estimate. Outcomes with negative values favour the control, and outcomes with positive values favour the intervention.

A: Pooled effect of parenting interventions on child-related outcomes by disability type

- Overall: Positive effect of 0.43 (confidence interval of 0.37 to 0.49)
- ASD: Positive effect of 0.48 (confidence interval of 0.37 to 0.56)
- ADHD: Positive effect of 0.47 (confidence interval of 0.35 to 0.55)
- Brain Injury: Positive effect of 0.53 (confidence interval of 0.15 to 0.88)
- Developmental Delay: Positive effect of 0.37 (confidence interval of 0.06 to 0.64)
- Diabetes: Positive effect of 0.21 (confidence interval of 0.02 to 0.37)
- Language Impairment: Positive effect of 0.63 (confidence interval of 0.38 to 0.87)
- Other: Positive effect of 0.26 (confidence interval of 0.13 to 0.38)

All disability-types show confidence intervals that do not cross zero, indicating statistically significant positive effects favouring intervention.

B: Pooled effect of parenting interventions on parent-related outcomes by disability type

- Overall: Positive effect of 0.40 (confidence interval of 0.31 to 0.50)

- ASD: Positive effect of 0.41 (confidence interval of 0.24 to 0.60)
- ADHD: Positive effect of 0.60 (confidence interval of 0.42 to 0.0.76)
- Brain Injury: Positive effect of 0.40 (confidence interval of 0.10 to 0.73)
- Developmental Delay: Positive effect of 0.42 (confidence interval of 0.07 to 0.50)
- Diabetes: Positive effect of 0.02 (confidence interval of -0.13 to 0.19)
- Language Impairment: No effect reported.
- Other: Positive effect of 0.26 (confidence interval of 0.09 to 0.47)

Most disability-types show confidence intervals that do not cross zero, indicating statistically significant positive effects favouring intervention. For parents of children with diabetes, the confidence interval does cross zero so we can't be sure intervention had a positive impact on parents' outcomes. For parents of children with language impairment, no effect was reported.

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Figure 4. Age-specific pooled effect of parenting interventions on child- (213 studies overall) and parent-related (108 studies overall) outcomes.

This image shows a summary of the pooled effect sizes of parenting interventions on children of different ages and their parent carers, separated into child-related and parent-related outcomes. It displays how strongly these interventions favour either the intervention group or the control group across different age groups. Each panel uses a forest plot style graph, where the x-axis runs horizontally from -0.50 to +0.75. A vertical line at 0 represents no effect. Each row represents a different outcome category, with a dot representing the pooled effect estimate for that outcome and a horizontal bar representing the confidence internal around the pooled effect estimate. Outcomes with negative values favour the control, and outcomes with positive values favour the intervention.

A: Pooled effect of parenting interventions on child-related outcomes by child age

- Overall: Positive effect of 0.43 (confidence interval of 0.37 to 0.49)
- 13 to 25 years: Positive effect of 0.27 (confidence interval of 0.04 to 0.52)
- 6 to 12 years: Positive effect of 0.37 (confidence interval of 0.28 to 0.46)
- Less than 6 years: Positive effect of 0.46 (confidence interval of 0.38 to 0.53)

All age groups show confidence intervals that do not cross zero, indicating statistically significant positive effects favouring intervention.

B: Pooled effect of parenting interventions on parent-related outcomes by child age

- Overall: Positive effect of 0.40 (confidence interval of 0.31 to 0.50)
- 13 to 25 years: Positive effect of 0.30 (confidence interval of 0.18 to 0.41)

- 6 to 12 years: Positive effect of 0.23 (confidence interval of 0.14 to 0.31)
- Less than 6 years: Positive effect of 0.50 (confidence interval of 0.35 to 0.64)

All age groups show confidence intervals that do not cross zero, indicating statistically significant positive effects favouring intervention.

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Figure 5. Funnel plot examining publications small-study effects (a potential sign of publication bias) in child-related outcomes

This image shows a funnel plot, used to check for publication bias and study heterogeneity in a meta-analysis of studies reporting standardized mean differences. The X-axis shows the Standardised Mean Difference (range: -3 to +4), and the Y-axis shows the Standard Error (range: 0 to 1.429, with 0 at the top). The plot contains an inverted triangle (the "funnel") centred at a Standardised Mean Difference of just below 0.5 (slightly to the right of zero, suggesting a small average effect estimate leaning positive). The funnel widens symmetrically as the standard error increases (as you move down the plot). Regions outside the funnel are shaded to indicate areas where data points would fall if there was potential bias or extreme heterogeneity.

Around 100 individual studies are represented as dots. Most points cluster near the top of the plot (around a Standard Error of 0.357 and smaller than 0.5) around a Standardised Mean Difference of 0 to 1. A small number of points appear further from the centre (both left and right) and lower down the plot (Standard Error of less than 0.5), which may indicate variability in study precision and possible outliers. There are a few scattered points outside the funnel limits, suggesting potential for minor publication bias or heterogeneity. The distribution appears mostly symmetrical around the centre line just below 0.5 Standardised Mean Difference. No major asymmetry is obvious, but a slight imbalance towards positive effects and scattered outliers suggest the possibility of mild publication bias or study variability.

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Figure 6. Funnel plot examining publications small-study effects (a potential sign of publication bias) in parent-related outcomes

This image shows a funnel plot, used to check for publication bias and study heterogeneity in a meta-analysis of studies reporting standardized mean differences. The X-axis shows the Standardised Mean Difference (range: -1 to +2) and the Y-axis shows the Standard Error (range: 0 to 0.661, with 0 at the top). The plot contains an inverted triangle (the "funnel") centred at a Standardised Mean Difference of approximately 0.4 (to the right of zero, suggesting a small average effect estimate leaning positive). The funnel widens symmetrically as the standard error increases (as you move down the plot). Regions outside the funnel are shaded to indicate areas where data points would fall if there was potential bias or extreme heterogeneity.

Approximately 80–90 individual studies are represented as dots. The points are spread out across the graph, with some clustering on the left of the Standardised Mean Difference centre (between -0.5 and 0.4). points cluster towards the top of the plot (Standard Error between 0 and 0.33). There are only a small number of studies with a Standardised Mean Difference below 0 (i.e. with negative or null effects). A noticeable number of points are situated outside the funnel limits on the right, particularly between 1 and 2 on the Standardised Mean Difference axis. Very few studies appear in the far negative (left) range, and studies are diffused widely across the graph, rather than clustering around the centre of the funnel. This asymmetrical distribution suggests the possibility of publication bias (a tendency to publish studies reporting positive or significant results) or other influences like small-study effects or selective reporting.

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Figure 7. PRISMA flow diagram of the Study Selection Process in the Meta-Synthesis

The image is a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram, depicting the process of identifying, screening, and including studies in a systematic review. The PRISMA flowchart systematically tracks the progression from identification to final inclusion, showing how studies were filtered and excluded at each stage.

Below is a breakdown of the flowchart:

1. Identification

Studies from databases/registers: 21409

- Embase: 8439
- PsycInfo: 7035
- Medline: 4834
- PubMed: 1101

References removed: 7427

- Duplicates identified manually: 72
- Records identified by Covidence: 7355
- Marked as ineligible by automation tools: 0
- Other reasons: 1

2. Screening

Studies screened 13982

- Studies excluded: 13186

Studies sought for retrieval: 789

- Studies not retrieved: 0

Studies assessed for eligibility: 789

- Studies excluded: 674
    - Grey literature: 205
    - Poster/Conference Abstract: 59
    - Full text unavailable: 16
    - Country not eligible: 40
    - Not a Parenting Intervention: 93
    - Participants outside the age range: 19
    - Parents and carers of children without a disability: 65
    - Not a qualitative study/does not include a qualitative component focussed exclusively on parents: 236

3. Included

Studies included in review: 115

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