FOUNDATIONS FOR LIFE: WHAT WORKS TO SUPPORT PARENT CHILD INTERACTION IN THE EARLY YEARS

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Foreword

The first five years of life are a significant period in human development. During this time, the infant grows into an individual who can walk, talk and express an opinion. This dramatic transformation is facilitated by a highly malleable brain that rapidly matures as a result of neurological processes triggered in large part by the child's environment. Young children thrive in environments that are predictable and responsive to their needs. Children struggle, however, in environments that are neglectful, unpredictable or overwhelming.

The quality of the young child's environment is heavily influenced by his or her parents or carers. The basics of a good environment include a healthy diet, a safe and stable home and unconditional love and affection. Most parents provide these basics with enthusiasm and ability. Their motivation comes from knowing what to provide and the confidence they can provide it. Parents gain this confidence with support from their family, friends and the services available within their communities. However, all parents benefit from support and advice that is well timed and sensitive to their needs and aspirations.

This review is about how to help parents improve how they relate, engage, communicate, play and live with children so as to improve children's experience of childhood and hopefully enhance their capability to flourish and avoid harm. It is founded on the dynamism of the parent–child relationship. It is dynamic in the moment and changes over time as children mature. Development is interactive in the way genes, neurons and children react to context and the experience is integrated into further development. So how parents interact in the first stages of life is vital to the way children develop. By focusing support on the quality of interaction we are addressing a primary driver of life chances rather than just treating symptoms. Always influenced by wider contexts and endowments, nonetheless activities that can enhance the quality of parent–child interactions can generate real opportunity and reduce risk.

As one of seven UK What Works Centres, the Early Intervention Foundation was established specifically to assess the quality of early interventions, including support for parents, through the careful scrutiny of their evaluation evidence. In the past, we have done this by synthesising information obtained from other What Works Centres or evidence agencies. This year, we mark our third anniversary with findings from this review in which EIF has itself assessed the strength of evidence of impact and estimated the resource costs of these early interventions.

This assessment considers the effectiveness of 75 interventions aimed at improving young children's development through support for the parent–child relationship. These interventions are a subset of the 100 interventions first identified in The Best Start at Home review published in March 2015.[1] Although the Best Start at Home review provided a very useful overview and framework for understanding the types of programmes available, less information was provided about the strength of their evidence or their overall costs. This year, we provide information about programme evidence and cost gained through our own robust assessment processes. We summarise this information at the aggregate level – to provide an overview of the current state of evidence underpinning this type of parenting support in the UK today -- and on the individual programme level, to illustrate the level of choice that is currently available.

The information contained here is dependent on the insight, learning and evaluation conducted by the developers of these programmes and by other research scientists across the world. It also draws on the knowledge and activities of practitioners and ultimately on the experiences and engagement of the multitude

[1] Axford, N., Sonthalia, S., Wrigley, Z., Goodwin, A., Ohlson, C.S., Bjornstad, G., Barlow, J., Schrader-McMillan, A., Coad, J. and Toft, A. (2015). *The Best Start at Home*. London: The Early Intervention Foundation.

of children and families who have participated in programmes over the years. We hope that before policy makers and commissioners make further decisions about how and where to invest in early intervention they read this report and share in the learning gained from this huge body of research and practice. The report summarises a wide field and we are immensely grateful to those who have generated this knowledge.

We believe that this information provides an important starting point for commissioners, practitioners and policy makers interested in learning more about the potential of interventions for improving child outcomes in the early years. We plan to add to this information in the months to come with further guidance about how our evidence and cost assessments can be used to identify and commission programmes within the Troubled Families and Healthy Child initiatives, as well as to programme providers on how to increase the evidence of programmes as they are being implemented. The details of some of the programmes reviewed here will also be included in our virtual Guidebook of Programmes, which will be updated later this year. Those wishing to engage with this information further will also have opportunities through a series of events and workshops we will be offering in the months to come.

Carey Oppenheim, Chief Executive, Early Intervention Foundation

Acknowledgements

This reports summarises work over a two year period and many individuals and agencies have contributed. As lead authors we are very grateful for the collaboration and support we have received.

Particular recognition is due to programme developers. Their progress in design, implementation and evaluation is the critical factor in achieving the promise of early intervention and without their efforts we would have nothing to review. Their engagement and contribution to the review has been essential, in providing data, evidence and insight.

The EIF Evidence Panel is described in more detail in chapter 2. This group of experts has provided oversight and guidance on methods and on our approach. In doing this, they have provided tremendous insight and background knowledge to steer us in ensuring a rigorous and fair assessment process. Alongside the formal Panel a number of other experts have contributed to moderation and review, in particular Jacqueline Barnes, Vashti Berry, Tracey Bywater and Paul Montgomery.

The review has also been steered by EIF trustees who whilst not engaging directly on the question of rating evidence and cost have provided insight and advice in establishing the EIF and framing the rationale and purpose of this work. Their strategic guidance has been essential, as has their consistent challenge on transparency, fairness and rigour. David Simmonds, Clare Tickell, Jean Gross and Honor Rhodes in particular have provided comments and advice at various stages of the work that have been very important in clarifying important issues.

Nick Axford, Jane Barlow, Jane Coad and colleagues who wrote the Best Start at Home (2015) report published by EIF provided the basis for this review by identifying the initial sample of programmes through an independent and systematic review of literature. They have also contributed considerable knowledge and insight to the assessment process.

The EIF was set up and funded by a grant from the Department for Education in 2013 which brought together funding from the Departments of Education, Work and Pensions, Health and Communities and Local Government. We are very grateful to them for the commitment to this work. Without their support and commitment to the work this review would not have been possible.

A great many EIF staff have contributed to this work, in multiple ways at multiple times. In addition to the authors named Carey Oppenheim, Donna Molloy, Ben Lewing have steered the work at various times, been important sounding boards for our thinking, hard taskmasters in ensuring it is relevant to EIF audiences and insightful drafters of content and messages. Ilenia Piergallini and Shirin Zaid have at different times provided essential support to the team in managing and delivering the work. Daniel Acquah provided operational oversight to sustain and plan the complex process of managing knowledge and correspondence. Gina Vourloumi, Peter Fitzsimons, Lara Doubell, Sean Walker, Rachel Latham and Helen Fanthorpe have provided excellent, insightful and patient research assistance and support with editing, graphics and analysis. Without their skill and perseverance this work would not have been completed.

We would also like to thank White & Case for the legal advice they provided ahead of publication.

Ultimately Kirsten Asmussen as lead author and Leon Feinstein as EIF Head of Evidence are responsible for the quality of the work and for the judgements reported, supported in these assessments by the Evidence team, Evidence Panel and expert moderators.

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Executive Summary

Background and introduction to the report

The Early Intervention Foundation is an independent charity and What Works Centre which champions and supports the use of effective early intervention for children with signals of risk.

We define early intervention as activity which responds to signals of risk and prevents problems from becoming entrenched, endemic, harmful and costly.

This review provides advice for policy makers and commissioners about how to help parents improve how they live and play with their children up to age 5 so as to improve their experience of childhood and enhance their ability to flourish and avoid harm.

In line with EIF's role as a What Works Centre we have assessed the evidence in rigorous, fair and transparent terms.

Unlike previous reviews which have tended to assess the international evidence to identify the best evidenced interventions, our approach has been to assess the evidence behind programmes available in the UK.

We have not assessed all forms of early intervention but have focused on programmes available in the UK that aim to improve the quality of parent–child interactions in the period from conception to age 5 in ways that lead to improved child development in terms of attachment, behaviour and cognitive development.

The assessment method and approach

The interventions were identified through the independent Best Start at Home review commissioned by EIF and published in March 2015. We have assessed in detail 75 programmes that met the scope of this report.

We have assessed interventions in terms of:

- The strength of the evidence from evaluation studies that they have delivered the impact on child outcomes specified by the scope of the review.
- The resource cost of their input requirements.

The standards for this assessment have been developed and agreed in collaboration with the EIF's Evidence Panel of academic specialists in the science of early intervention and evaluation. The process and standards are set out in detail in Chapter 2 of the report and have been subject to oversight and scrutiny by the Evidence Panel.

We have developed an approach to assessment of the evidence which recognises commissioners' need for clear information on the level of evidence achieved while also recognising a need for innovation and development, particularly where there are gaps in the evidence. We also recognise the need for local data and evidence, rather than an excessive dependency on evidence from elsewhere leading to considerable uncertainty about local relevance and applicability.

We have developed an efficient method to estimate resource cost. This is necessary because the full assessment of the actual market unit cost of an intervention can take considerable study and analysis and

would not be possible for the number of programmes assessed in this report. We have developed a means to provide a comparable rating of resource requirements that can guide commissioners' thinking about the likely cost of this set of interventions, based on responses by providers to a core set of questions about implementation requirements.

We have not yet completed analysis of the overall impact of these interventions and will provide a further report with more information on impact later in 2016.

Headline findings

1. *There are a range of effective programmes, differing by approach and rationale.*
This report has identified 17 programmes with good evidence that, if carefully commissioned, are likely to be effective. These programmes represent a variety of ways in which developers are working out how to achieve valuable outcomes for different types of beneficiaries using increasingly well-specified components. We have also identified an addition 18 programmes that are based on firm scientific principles but have not yet been tested in terms of impact or benefit for participants. We believe that these programmes have the potential to demonstrate effectiveness with further testing.

2. *Although the case for early intervention is very well made, the overall evidence base for the programmes available now in the UK needs further development.*
This is not a comment on any one programme but on the field as a whole. It is inappropriate to draw strong conclusions about which programmes will work or will not work when each programme only has a small number of evaluations and few have very rigorous or long-term evaluation across multiple sites. More high-quality evaluation is needed if the field is to become a widespread and sustainable source of benefits for children and families and of savings for public agencies.

3. *Overall, the evidence is strongest for programmes that target based on early signals of risk in child development (targeted-indicated).*

This does not mean that universal programmes or programmes that target on the basis of demographic factors are ineffective. It is important to remember that our sample of programmes is partial and that the evidence of impact is relatively immature. The commissioning of programmes should depend on an assessment of local need and purpose and on the feasibility of high-quality implementation. We are not suggesting that universal provision is ineffective or unnecessary, nor are we saying that targeting within universal services is not necessary. Nonetheless, the particular benefit of targeting and shaping programmes on the basis of early signals of child development is an important emerging hypothesis that will be further tested as the sample is broadened and further work undertaken.

There are a number of early signals of risk during children's early development involving children's attachment security, behavioural self-regulation and early learning, to which early intervention programmes can effectively respond.

4. Programmes which focus on children's behavioural development tend to have better evidence of effectiveness than those focused on attachment or cognitive development. This does not mean that attachment or cognitive development programmes are ineffective. More and better evaluation is required across all of these outcome domains.

Findings on programmes aiming to improve attachment security

- Forming a secure attachment relationship with the primary carer is an important feature of child development.

- Attachment can be hard to measure, develops early in life and can change through childhood. Therefore programmes can find it difficult to demonstrate impact. However, some have done so and there are evidence-based examples at all 3 of the levels of need considered.
- This report identified five interventions with good or established evidence of improving attachment related behaviours in young children and reducing serious risks in highly vulnerable children.
- Four out of the five evidence-based attachment programmes were relatively high cost, involving frequent contact with vulnerable families for a period of a year or longer.
- However, these programmes are also relatively high impact, with evidence of improving attachment security, children's early language and reducing child maltreatment.

Findings on programmes aiming to improve behavioural self-regulation

- Noncompliant child behaviour is a normal part of toddler development. Most children outgrow this by the time they are 3, but some children continue to show problems after age 3. Parents with a noncompliant 3-year-old child often want and need more help.
- The review identified 10 programmes with good or established evidence of improving children's behaviour in the short term.
- Their best evidence involves families with a noncompliant child aged 2 or older.
- When well targeted, these programmes can keep problems from becoming worse and improve the parent–child relationship. There is less evidence for the effectiveness of programmes that aim to prevent problems emerging in the first place.
- Evidence-based programmes to enhance behaviour tend to be relatively low cost, often based on group activity and of relatively short duration (in comparison to other programmes in this review).

Findings on programmes aiming to improve cognitive development

- Social disadvantage is consistently linked to gaps in young children's cognitive and language development.
- The best evidenced programmes to improve cognitive development are the well-known US programmes such as Abecedarian and HighScope that have been evaluated over long periods but are not readily available in implementable form in the UK.
- Within the domain of cognitive development the review had a particular focus on language and communication skills. The sample was relatively weak on identification of cognitive development programmes and so conclusions must be cautious.
- The evidence base for the programmes we have identified is relatively weak, although there are well-evidenced interventions. This is surprising given the importance of the home environment to child cognitive development, the importance of cognitive development to school success and life chances and the considerable investment that has occurred over recent decades. It is clearly an important area for innovation, evaluation and development.
- As children start childcare and enter preschools these settings make substantial contributions to cognitive and social and emotional development and it is important there is good interaction between these settings and parents and carers that recognises the contribution of each.
- The interventions with good (Level 3) evidence of being effective are medium cost, reflecting the fact that they are delivered to families individually over a period of a year or longer.
- These features are consistent with the best evidence from the US programmes, although it is also clear that parenting interventions do not fully replace the need for centre-based provision for young children living in disadvantaged circumstances.

Next steps

Dissemination and learning

This review was developed to inform the commissioning of early years services locally. Commissioners of local children's, maternity and public health services have a critical role in using evidence about what has been shown to be effective in developing services. EIF will be working with both sector organisations and commissioners and service leaders to communicate and disseminate the findings from this review and support use of this evidence.

Maintenance and further analysis

This evidence will continue to change and evolve and programmes will also continue to change and adapt so it is vital that there are opportunities to update the advice to commissioners and policy makers. The Early Intervention Foundation will review this evidence and provide an update in roughly 12 months' time.

This assessment has enabled EIF to develop a database of studies that have sufficient reliability to form the basis of analysis of impact. Analysis of these impacts will be carried out over the next few months leading to a further report on cost effectiveness.

In the months ahead we will develop guides that consolidate the evidence from this review with related evidence from the Healthy Child Programme and other sources such as related What Works Centres and other systematic reviews.

We will report later this year on what measures exist to best assess or identify risk, so as to provide advice to local Councils and others about how to identify the trends in development that signal a need for early intervention.

Guidebook

The Early Intervention Foundation website hosts an online Guidebook with a Programmes Library which was created in 2014 to provide an accessible overview of the evidence. Later this year a subset of the programmes from this review will be added to the Guidebook as will programmes from other reviews. We will also upgrade the Guidebook so it provides clearer advice about the meaning of the evidence standards and about how to improve evidence, and with more ways for programmes to be registered.

Chapter 1

Introduction

The Early Intervention Foundation was established in July 2013 to champion and support the effective use of early intervention. By 'early' we mean activities that support children's development at all ages, to stop problems from becoming entrenched. By 'intervention' we mean programmes and practices that target the needs of children and families based on early signals of longer-term risk. We accomplish this through support and advice to communities and agencies on the use of effective and timely child and family support. We believe that this advice will not only reduce the human and economic costs of late intervention, but ultimately increase the life chances of all children living in Great Britain.

This advice includes information about early intervention activities in terms of the strength of their evaluation evidence, impact and cost. As a member of the UK What Works network, we are sponsored by the UK government to provide this information in a way that supports transparent policy-making and increases the use of effective interventions. While we strongly believe that commissioning decisions should be evidence informed, we do not feel that such decisions can simply be reduced to a single question of which programmes have been found effective as represented by a rating. Commissioning decisions need to take account of local context, cost and benefits, implementation capability as well as evidence of impact. However, we also believe that knowledge of individual programme efficacy, within a broader context of relevant evidence, is useful for improving policy and practice.

The advice we provide is collected and disseminated through various activities that include our What Works reviews, which provide clear and accessible information about the cost, strength of evidence and impact of early intervention programmes and practices. To date, we have completed five What Works reviews on the topics of Domestic Violence, Social and Emotional Learning, Gangs and Youth Violence and Inter-parental Relationships, as well as the first Best Start at Home review that identified the interventions described in this report. This work is supported by the EIF Evidence Panel of academic specialists in the evaluation of the impact of early intervention programmes. This group has overseen the development of the evidence standards we have used and ensured they are aligned with the latest, most scientific and relevant approaches.

The Best Start at Home review identified 100 programmes that were developed to support parent–child interaction in families with a child between conception and age 5. The Best Start at Home review introduced a useful framework for understanding the types of programmes available, but provided little information about their evidence or the resources required to implement them. In this second report, we provide information about the evidence and costs of 75 of these programmes that have undergone two assessments:

1) A robust assessment of their strength of evidence based on the EIF evidence standards. The EIF standards (described in Chapter 2) were developed as part of our mandate as a What Works Centre to provide a common metric for comparing programmes on the basis of their evaluation evidence.
2) A new cost rating system which enables comparisons between programmes in terms of the resources required to implement them.

We believe that programme providers, commissioners and policy makers will find this information useful for understanding the potential of early intervention programmes for improving child outcomes and reducing

Local Authority cost. While the 75 programmes described in this report by no means represent the entirety of programmes available in the UK, we do believe they accurately reflect the range of programme types, including many that are currently in widespread use.

Aims of this report

The primary aim of this report is to describe the main findings from our strength of evidence and cost assessments. We first describe, in Chapter 2, our approach methods for assessing the evidence strength and costs of the programmes identified. As explained in Chapter 2 the review has assessed interventions that aim to improve child development through support for the quality of interaction between parents and children in the period up to age 5 years. We consider children's development within three important domains: attachment security; behavioural self-regulation; and cognitive development. We showcase an assessment system that is both robust and efficient for informing commissioning decisions. This information will provide assurance to our stakeholders that our processes are transparent, fair and consistently applied.

We then describe the main findings from our strength of evidence and cost assessment in Chapter 3, providing information about these programmes through their strength of evidence and cost ratings. This information includes an aggregate overview of the current state of evidence in parenting support for families with young children, as well as individual programme ratings to allow for fair comparisons between programmes in terms of their evidence and cost. Further details about programmes with evidence of an impact on a child outcome can also be found in their Assessment Reports on the Early Intervention Foundation website.

A supplementary aim of this review is to use our findings to understand the potential of this type of intervention. The three outcome domains were chosen because they represent important developmental processes taking place between the parent and child that lay the foundation for skills known to contribute to children's future success as they develop. A growing body of evidence now tells us that these three skills also lay the foundation for the 'executive functions', which refer to a group of advanced cognitive capabilities that allow children to plan, stay focused and manage their impulses.[2] It is thought that these skills (which include the ability to delay gratification and persist in the face of adversity) are especially predictive of children's school achievement and particularly sensitive to the quality of interaction between the parent and child.[3] These three domains therefore represent specific areas where children and parents could particularly benefit from early intervention. This potential is described for each outcome domain in turn in Chapters 4, 5 and 6.

A final aim of this report is to identify areas where innovation and further programme development are required. In this respect, we highlight gaps in current provision and make suggestions about how research evidence could be used to develop new programmes to fill these gaps. We also identify a set of principles to further inform the development of new and existing programmes. The report concludes with key findings and a short discussion of next steps (Chapter 7).

[2] Center on the Developing Child at Harvard University (2011). Building the Brain's "Air Traffic Control" System: How Early Experiences Shape the Development of Executive Function: Working Paper No. 11.

[3] Bernier, A., Carlson, S. M., Deschênes, M., & Matte-Gagné, C. (2012). Social factors in the development of early executive functioning: A closer look at the caregiving environment. *Developmental Science*, *15*, 12–24.

Chapter 2

Approach and methods

In this chapter we set out the basics of the approach we have adopted to assess the programmes in scope of the review. We first set out the guiding principles that have shaped our approach. This is followed by a discussion about the ways in which evidence should be used to guide commissioning and measure impact at the local level. We then describe our methodology, first for identifying programmes and then for assessing their evidence and cost. We conclude with a summary of key points.

Guiding principles

Our approach to evidence is informed by six guiding principles that are useful to keep in mind when reading this report.

1) Do no harm

We must always be careful not to promote interventions that could unintentionally cause harm. This is an important rule for social policy and creates a strong ethical basis for improving evaluation. At the very least commissioners, providers and policy makers should know they can meet this objective.

2) Do not waste

As Archibald Cochrane originally observed, resources will always be limited.[4] This means we should prioritise interventions that have evidence of being cost-effective. This principle stresses the need for information about programme costs, as well as the need for robust evaluation evidence. Interventions should therefore not only be able to demonstrate their effectiveness and potential scale of impact, they should also be able to justify their costs.

3) One size does not fit all

This principle acknowledges that a single programme or practice is unlikely to meet the needs of all families. There is good evidence to suggest that programmes are more likely to be effective if they are specific to children's developmental needs.[5,6] We therefore recommend that programme models specify children's age and their families' level of need. Information about effectiveness for children of different ages is particularly important for programmes targeting the early years, when children mature rapidly.

4) There are no magic bullets

In this report, we describe a number of programmes with evidence of improving child and parent outcomes. This evidence includes reductions in mothers' symptoms of depression, long-term improvements in children's behaviour and a reduced likelihood of child maltreatment. These are indeed positive findings. However, it is

[4] Cochrane, A. L. (1972). *Effectiveness and Efficiency. Random Reflections on Health Services*. London: Nuffield Provincial Hospitals Trust.
[5] O'Connell, M. E., Boat, T., & Warner, K. E. (Eds.). (2009). Preventing Mental, Emotional, and Behavioral Disorders among Young People: Progress and Possibilities. National Academies Press.
[6] Mcdermott, B. (2002). From neurons to neighbourhoods: The science of early child development. *Australian and New Zealand Journal of Psychiatry*, *36*(2), 285–286.

important to keep in mind that these impacts are typically modest in size and while statistically significant, do not necessarily reflect positive changes in the majority of families receiving the intervention.[7] This principle emphasises that a single, short intervention by itself does not provide an easy solution for serious problems.

5) There is always room for improvement

Programme providers should never rest on the laurels of positive findings from one or two studies. The fact that a programme has worked at one point in time is no guarantee that it will work again, especially when offered in a new and different setting. This principle therefore recognises the need for evaluation at all points in a programme's development to determine whom the intervention works for and under what circumstances it works best. In this respect, evaluation should always be part of a programme's continuous development. This is true for all programmes, even those with established evidence.

6) Assessment ratings are not a replacement for professional judgement

The EIF assessment process was developed specifically to inform judgements about the extent to which a programme has been found effective in at least one rigorously conducted evaluation study. While this information is considered by many to be indicative of programme quality, the amount of weight given to evaluation evidence (as opposed to other programme features) is a matter of careful judgement. **From this perspective, our assessment ratings should never be viewed as a kite mark, validation, accreditation or recommendation of any given programme.** Our recommendations for how evaluation evidence should be used as part of the commissioning process are described below.

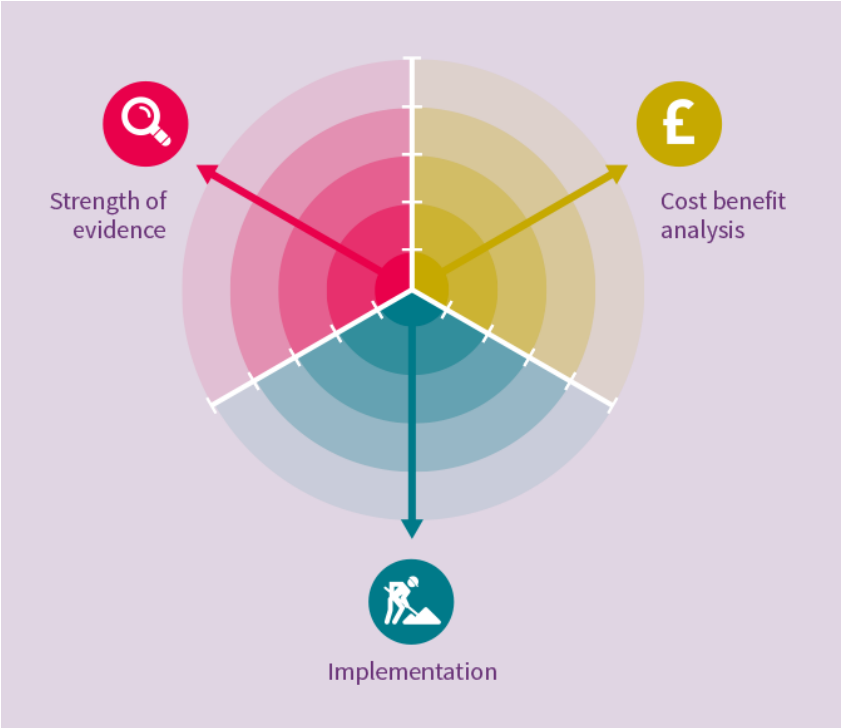
Intelligent commissioning

Real life is not a clinical environment. This can have an impact on the success of an intervention when implemented locally, no matter how strong the evidence. How well an intervention works will be affected by a variety of local conditions, including the extent to which it is actually needed within the local community. Intervention effectiveness is also determined by the quality of the local infrastructure around its implementation. This infrastructure includes the local referral systems, the availability of a workforce who can effectively deliver the intervention, the resources for supervision and many other local factors.

When considering whether to commission a programme, the costs and potential benefits should take into account the needs and characteristics of the population and the systems available for delivering the intervention. We therefore stress that while evidence of effectiveness is important for improving child outcomes, it is not sufficient for determining commissioning decisions. As Figure 1 indicates, commissioning decisions must take a wider set of factors into account.

[7] Brooks-Gunn, J. (2003). Do You Believe in Magic? What We Can Expect from Early Childhood Intervention Programs. Society for Research in Child Development.

Figure 1: Three aspects of strategic commissioning



- **Strength of evidence** concerns the extent to which a programme has evidence of improving a meaningful child outcome from an evaluation which is sufficiently rigorous to permit an attribution of causality to the intervention.
- **Implementability** concerns the extent to which a programme's implementation requirements are understood and met locally in that the commissioning agency and partners have the resources, capabilities and means to implement the programme effectively and know whether it is delivering the benefits it should. Increasingly organisations are developing criteria to assess whether a particular approach is right in a specific context.
- **Cost benefit analysis**. The fact that a programme has been found to be effective in a specific study does not mean that it is necessarily the best programme to commission. We estimate the relative cost of programmes but the costs and benefits of an early intervention approach are primarily local and therefore need local analysis. Good commissioning of early intervention requires analysis of population needs and assets, and good appraisal of the likely benefits of the programme for the commissioning agency, other agencies and the wider populations for which they are responsible.

As Figure 1 indicates, information about the relative scale of benefits to costs is an important part of any commissioning decision. This is particularly challenging for early intervention programmes, however, because their outcomes are frequently many years into the future and span multiple systems.

The programmes reviewed here aim to improve features of child development up to age 5, with the intention that this will generate longer-term benefits. However, very few evaluations run for more than two years, in which case any longer-term benefits are only theoretical until they have been evidenced directly. Furthermore, the benefits may be broadly spread across a range of places and agencies. If a beneficiary child or family moves to another area, the other area will receive any resulting benefits of early intervention. Programmes funded by

a local Council may generate benefits not only for other areas but also for other agencies within the same area. Many of the benefits of early intervention may be social (improved environments and communities through reduced crime for example), economic (benefits to firms through improved skills of the workforce, or to the wider economy through enhanced growth) or inter-generational (impacts that run across generations). Only a small proportion of these total benefits will be received by the funding agency for early intervention and only a further fraction will be directly cashable.

It is partly for these reasons that the Early Intervention Foundation was established, to provide a sustained push to improved monitoring and modelling of impact across the long-term. However, as we make clear here, this is not a straightforward exercise. In this report we have focused on accurate and efficient estimates of the cost of programmes and initial assessment of the degree to which different programmes deliver observable child benefits that plausibly impact on longer-term outcomes that might generate cashable or wider benefits. We will update this initial work with more detailed analysis of the feasible long-term impact of these programmes with a further report later in 2016.

Methods

In this section we describe our methods for identifying and assessing the interventions described in this review. We use the terms 'programme' and 'intervention' interchangeably to refer to a discrete and predefined set of activities that are:

- Offered by a specific provider in a form that can be commissioned by a Local Authority or other agency in the form of practitioner training and other processes for ensuring implementation quality.
- Designed specifically to benefit a predefined target population in terms of age and level of need.

This report includes the assessment ratings of 75 different interventions developed by 51 different providers. This reflects the fact that many of the programmes reviewed here are part of a suite of programmes offered by a single provider. For example, Triple P offers five separate programmes that were within the scope of this review. In these cases, we assessed the evidence for each programme variation individually, since differences in the target population may substantially change the use and/or efficacy of the programme. Although we recognise that there may be increased efficacy when these programmes are offered together within the context of the broader Triple P suite, the focus of the current review is restricted to the evidence underpinning specific programmes. Hence, we provide a strength of evidence and cost rating for each separate version of the Triple P model that was found to be within the scope of this exercise.

It is also important to note that this approach differs from that taken by other evidence synthesis organisations (e.g. Cochrane, NICE) that make use of meta-analytic methods to synthesise findings from multiple interventions with similar aims and objectives. These alternative methods result in an aggregate score or statement thought to provide a robust estimate of the quality of evidence for a given practice type. They do not, however, facilitate comparisons between programmes on the basis of their evaluation evidence, as the EIF methodology does.

Scope

The programmes included in this report were initially identified through systematic methods first described in the Best Start at Home review. The primary aim of that review was to identify a representative range of interventions that were either currently being used in the UK, or relevant to the UK context. The search strategy therefore systematically interrogated scientific data bases and the Internet to identify programmes with well-established evidence, as well as those with little or no evidence. This was supplemented by information from some Local Authorities about programmes in which they had an interest.

Programmes

The Best Start at Home review was by no means exhaustive. Nevertheless, it identified over 100 parenting interventions that supported young children's development. Specifically, the Best Start at Home review ***included*** a range of universal and targeted programmes that specifically supported the non-physical development of children between conception and age 5 through direct work with the parent and in some instances the parent and child. Programmes with an antenatal component were also included in the review if they expressly aimed to improve a non-physical child outcome.

Programmes were ***excluded*** if their evidence did not include children under the age of 5, they exclusively supported young children's physical development or they addressed parents only (e.g. adult therapy). Programmes were also omitted if they had not undergone an evaluation in the last 20 years. The full details of the Best Start at Home review selection process can be viewed in A Better Start at Home.

The 75 programmes described in the current report are a subset of the original 100 programmes first identified in the Best Start at Home review. Thirty-five programmes were determined to be ineligible because they:

1) Targeted older children (1)
2) Were judged as a multi-component system or initiative, such as Sure Start or Head Start (11)
3) Were unable to provide sufficient information about their evidence to complete the review (15)
4) Targeted children at the edge of care (4)
5) Were found to be no longer available after closer investigation (1)
6) Were identified as practices rather than specific programme models (3).

Ten additional programmes were added because it became apparent during the initial stages of the assessment process that three interventions had additional variations with discrete content and separate bodies of evidence for different target populations, thus constituting several separate programmes for each original programme model.

In the end, 75 programmes underwent a full panel assessment. While nearly all of these programmes are currently running, we have also included a handful of programmes that we know are not available now but could be commissioned if there is interest to re-establish them.

We cannot assess the precise degree to which this sample of programmes is representative of the wider landscape of spending on early intervention because there are no comparable data on spend on programmes by Local Authorities and other agencies. Much spending on early intervention operates through the practices of workforces in public or voluntary agencies and is not based on the programmes assessed here. However, many well-known and widely implemented programmes have been assessed here as well as others representing a range of locally developed programmes at an earlier stage of development. Therefore this review provides an important overview of the landscape of existing provision even if it is partial.

Outcomes

The primary focus of this review is to consider the effectiveness of individual programmes that were developed explicitly to enhance children's early development in the domains of attachment security, behavioural self-regulation and cognitive development. These programmes can be delivered individually or with groups of parents, but to be eligible for this review they must:

- Work with parents (as opposed to teachers, or children directly without the parent involved)
- Expressly aim to improve a child outcome by supporting change in parents' behaviours, attitudes or feelings
- Target families with a child between conception and age 5.

Although we recognise that other outcomes, including those involving parents, schools and communities, are important for children, the focus of this review is on the evidence of improvements to child development. This approach reflects the EIF's focus on supporting improvements to the life chances of children and reducing the demand for late, statutory intervention. In our view, unless interventions achieve impacts that are integrated into the observed development of the child it is less likely that they will result in sustainable, long-term benefits. This approach is consistent with that adopted by other evidence-based clearinghouses that assess programmes for children and families, including the Washington State Institute for Public Policy and Blueprints for Healthy Youth Development.

Programme outcomes that are particularly likely to reduce the need for late intervention are those that have been linked to reductions in youth crime and antisocial behaviour, alcohol and substance misuse, risky sexual behaviour, mental health problems, school exclusion and child maltreatment. Interventions addressing these outcomes may involve working with the child directly, or through their environments, including their families and schools.

In the assessments made for this review we consider whether a programme has evidence of improving a child outcome through direct work with the parent up to the age of 5 for the child. This work may include:

- Teaching parents specific skills
- Providing information that may increase parents' knowledge or change their perceptions, beliefs or attitudes about their child
- Improving parents' capacity to engage positively with their child and support his or her needs.

From this perspective, improved parent outcomes are an inherent goal of all of the interventions assessed as part of this review. In fact, some of the programmes described here only evaluated their effectiveness with parents, as it was assumed that children would naturally benefit as a result of positive changes in their parents' behaviour.

While we view this emphasis on parenting outcomes as reasonable, we do not believe that improvements in parenting outcomes are sufficient for assuming that children will necessarily benefit as well. This is because the relationship between parenting behaviours and child outcomes is not completely deterministic or linear.[8,9] A variety of factors likely influence the extent to which changes in parenting behaviours will result in improved

[8] Duncan, G. J., Magnuson, K. A., & Ludwig, J. (2004). The endogeneity problem in developmental studies. *Research in Human Development*, *1*(1–2), 59–80.

[9] Waldfogel, J. (1999). Early childhood interventions and outcomes. Centre for Analysis of Social Exclusion, London School of Economics

short- and long-term child outcomes.[10] These factors include the quality and intensity of the intervention, the parents' capacity for change and the outcomes the intervention is intended to achieve.[11]

For these reasons, higher ratings are awarded to programmes with evidence of improving a *child* outcome. This is also true of programmes offered during the antenatal period and infancy. Although we recognise that it may be difficult to reliably assess child outcomes during pregnancy and the first year of a child's life, it is not sufficient to assume that children will automatically benefit if improvements in parenting behaviours are observed. The ways in which child outcomes influence a programme's rating are described in greater depth at later points of this chapter.

Level of need

We recommend that interventions identify the needs of the families attending them and provide content that is appropriate for meeting these needs. For the purposes of this review, we have classified programmes as follows:

- **Universal:** This refers to interventions that are available to all families. These activities may take place alongside or as part of other universal services, including health visiting, schools or children's centres.
- **Targeted-Selective:** Applies to services that target or 'select' families with characteristics that place them at greater risk of experiencing problems. These characteristics include economic hardship, single parenthood, young parents and/or ethnic minorities.
- **Targeted-Indicated:** Refers to a smaller percentage of the population of families with a child or parent with a pre-identified issue or diagnosed problem requiring more intensive support.
- **Specialist:** Refers to interventions developed for high-need families, where there is an ongoing problem (e.g. illness; special needs) or serious child protection concerns.

The scope of the programmes included in this report is limited to Universal, Targeted-Selective and Targeted-Indicated programmes. Specialist programmes were explicitly excluded. We strongly advise that those interested in commissioning these programmes pay close attention to these details, because children's age and level of need often have significant bearing on whether or not programmes have been found effective.

The assessment process

The EIF assessment process used for this review incorporated a number of checks and balances involving internal and external experts to ensure that it was systematic, transparent, fair and complete:

1) Programmes were first identified through the systematic methods described in the Best Start at Home review.
2) Programmes were judged as eligible for an assessment, as described above.
3) A second web-based search was conducted to identify all of the published evaluation evidence on each programme.

[9] Kazdin, A. E., Whitley, M., & Marciano, P. L. (2006). Child–therapist and parent–therapist alliance and therapeutic change in the treatment of children referred for oppositional, aggressive, and antisocial behavior. *Journal of Child Psychology and Psychiatry*, *47*(5), 436–445.

[11] Weisz, J. R., & Kazdin, A. E. (Eds.). (2010). *Evidence-based Psychotherapies for Children and Adolescents*. Guilford Press.

4) A list of evidence was produced for each programme and shared with the providers to determine whether any evidence had been missed of which they were aware.

5) Providers were also asked to complete a cost questionnaire.

6) The evaluations for each programme were assessed in terms of the strength of their design against the EIF Standards of Evidence (see below). This work was completed by highly trained researchers working within the EIF evidence team.

7) The initial assessments and evaluation reports for each programme were then forwarded to an external expert who also reviewed the most robust evidence for each programme. External experts were invited to the panel on the basis of their expertise within specific areas of interest. A minimum of five reviewers participated on each panel. Annex 1 provides the names and expertise of all the panel members and external experts participating in the subpanels.

8) A panel meeting took place where the evidence team and external expert discussed together the strength of evidence underpinning a set of interventions and agreed an initial evidence rating for each programme reviewed.

9) Once initial ratings were agreed for all of the programmes identified within a review, a moderation meeting involving the full Evidence Panel took place to further debate and agree the final assessment ratings.[12]

10) The strength of evidence and cost ratings were then shared with the providers who had an opportunity to challenge them on the basis of inaccuracies or misapplication of the EIF evidence standards. When necessary the challenges were reviewed and debated by the full EIF Evidence Panel before a decision to accept or reject the challenge was agreed.

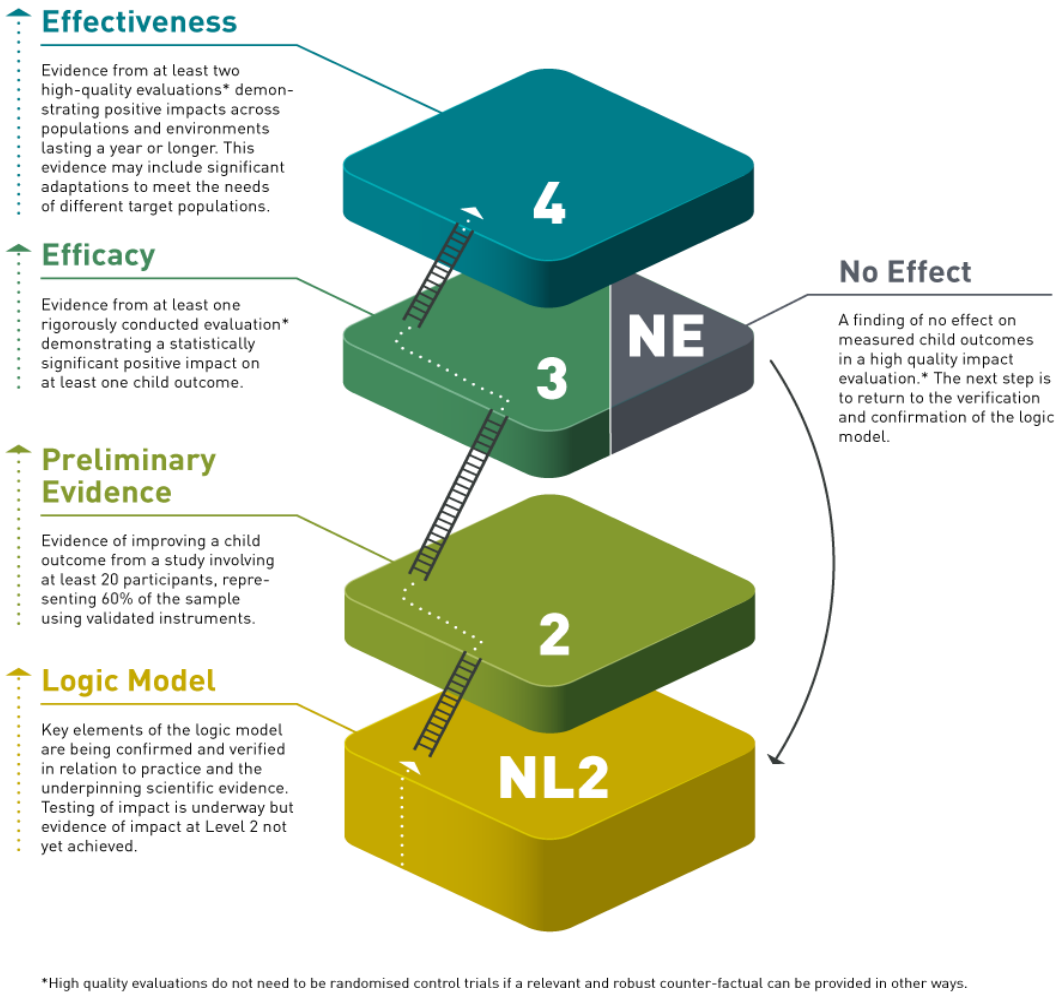
[12] Ultimately the rating is the responsibility of Kirsten Asmussen (lead author) and Leon Feinstein (Head of Evidence) as accountable individuals acting on behalf of the EIF, supported in our judgement by our review of the evidence and the advice of the Evidence Panel.

Standards of Evidence

Assessing the strength of evidence of impact

Figure 2 provides an overview picture of the EIF evidence standards as they were used for assessing the programmes selected for this review.

Figure 2: EIF Evidence Standards



These standards were developed in consort with other What Works Centres to assess interventions in terms of their impact and cost. They are broadly similar to the Maryland Scale and other critical appraisal systems[13,14]

[13] Puttick, R., & Ludlow, J. (2013). Nesta… Standards of Evidence: An approach that balances the need for evidence with innovation. Available at: http://www.nesta.org.uk/sites/default/files/standards_of_evidence.pdf

[14] Gottfredson, D. C., Cook, T. D., Gardner, F. E., Gorman-Smith, D., Howe, G. W., Sandler, I. N., & Zafft, K. M. (2015). Standards of evidence for efficacy, effectiveness, and scale-up research in prevention science: Next generation. *Prevention Science*, *16*(7), 893–926.

that recognise stages of development and were formally approved by our Evidence Panel during the set-up phase of the organisation. The detailed underpinning criteria are provided in Annex 2.

The standards were developed specifically to perform two complementary functions:

- To provide a rational system for describing and assessing a continuum of interventions ranging from those at early stages of development to those that have replicated findings in multiple rigorous evaluations involving variations in populations and settings. In this respect they represent a *summative* system for describing a programme in terms of its most robust evaluation evidence. This enables us to advise commissioners about which programmes have good evidence of having been effective.
- To provide clear guidelines and advice on the *formative* use of evaluation evidence to develop and commission programmes and practices. From this perspective they constitute a set of steps that a provider and commissioners can take to develop a programme's evidence base.

The five assessment categories are purposefully discrete, so that clear distinctions can be made between different kinds and levels of evidence. The criteria and thresholds for each level are consistent with the evidence standards used by other What Works Centres and organisations involved in evidence synthesis.[15,16] A rating numeral (e.g. 2, 3, 4) acknowledges that the programme's most robust evidence meets the minimum threshold for each rating category. A '+' is awarded to programmes with evidence that substantially exceeds the minimum threshold requirements. For example, a programme would receive a 2 if it met the minimum threshold criteria for a Level 2 rating; a 2+ is awarded if the evidence has substantially exceeded the minimum threshold, but did not meet the requirements for a Level 3 rating. Figure 2 summarises the minimum threshold criteria for each rating category and Annex 2 describes the basis by which a "+" may be awarded.

Not Level 2 (NL2)

Not yet Level 2 (NL2) is shorthand for describing programmes that do not yet have Level 2 evidence for a variety of methodological reasons. Before describing them, however, it is important to recognise that programmes falling into this category are typically at earlier stages of their development, doing important foundational work. This work includes **confirmation** of the programme's core assumptions and logic model and **verification** of its primary child outcomes.

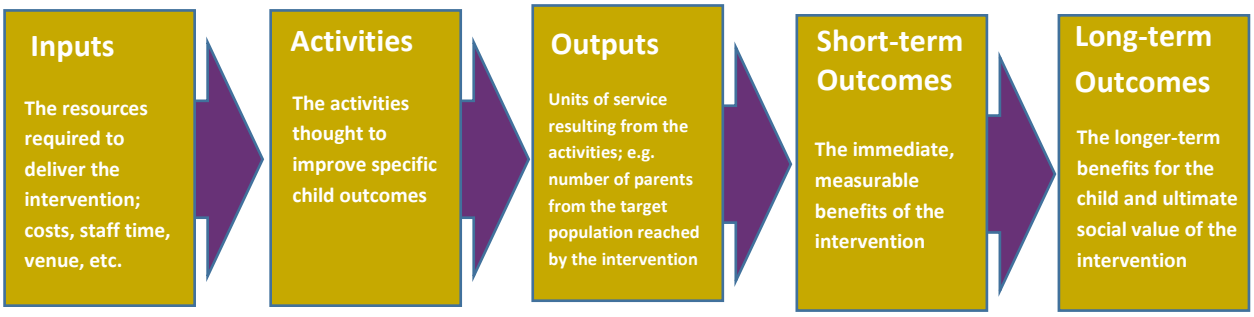
Confirmation

Confirmation refers to the initial stages of a programme's development when key decisions are being made about the programme's logic model and the extent to which its core assumptions are confirmed by scientific evidence. Logic model confirmation requires providers to identify the intervention's inputs, activities, outputs and outcomes and determine the ways in which they are supported by scientific evidence. Examples of a programme's inputs include the resources required to implement the intervention in terms of staff time, venue, transportation and materials. Activities represent the intervention's core content and outputs represent the extent to which these activities reach the programme's primary target population. Outcomes are what the intervention is ultimately aiming to achieve – both in the short- and long-term.

[15] Greenhalgh, T. (1997). How to read a paper. Getting your bearings (deciding what the paper is about). *BMJ, 26*, 243–246.

[16] Farrington, D. P., Gottfredson, D. C., Sherman, L. W., & Welsh, B. C. (2002). The Maryland scientific methods scale. In L. W. Sherman, D. P. Farrington, B. C. Welsh, & D. Layton MacKenzie (Eds.), *Evidence-based Crime Prevention*, 13–21. London: Routledge.

Figure 3: The elements of a good logic model



A programme is more likely to be effective if there is a clear and rational link between its logic model and robust scientific evidence.[17] Examples of robust evidence include findings from observational (e.g. longitudinal) studies and experimental impact evaluations. A good logic model should be able to specify how scientific evidence supports each of its core elements, including staff qualifications, the programme's content, its duration (i.e. its dosage) and its primary target population. This specification requires a solid understanding of both the theories underpinning the programme model and what others have tried before. This understanding can be gained through a systematic review of the most recent scientific literature involving the outcomes the programme wishes to achieve. Knowledge gained through a literature review can then be used to develop an 'evidence map' which illustrates how each of the programme's core elements is supported by robust scientific evidence. Evidence maps are, in turn, useful for developing the programme's blueprint which further specifies key short-term objectives for each intervention activity. Examples of such objectives include specific learning goals which are clearly linked to the programme's short- and long-term outcomes.

Verification

Once the programme has confirmed its logic model and blueprint, it is possible to verify its feasibility for improving child outcomes through basic testing and monitoring. This testing should include methods for determining the circumstances under which the intervention is best implemented and the extent to which it is acceptable for its target population. Methods used to verify a programme's feasibility include user satisfaction surveys, focus groups and monitoring data. Although these methods are not suitable for determining a programme's impact, they are excellent for verifying how and why a programme might work.

At this point, the providers should also consider various methods for objectively measuring the programme's intended child outcomes through the use of validated instruments. This typically requires further specification of the programme's short- and long-term outcomes (through the identification of measures) and some piloting to determine whether these measures are appropriate and feasible.

Applying the NL2 rating

NL2 represents an important stage in a programme's development, reflecting important processes that lay the foundation for more rigorous evaluations. These processes range from logic model confirmation in the absence of evaluations, to rigorously conducted impact evaluation studies that have not yet fully verified the programme's impact on key child outcomes. Programmes typically receive an NL2 rating for the following reasons:

1) No evaluation evidence
2) Evaluation with a sample size that is too small (< 20), or unrepresentative (< 60% of the entire sample)
3) Have not yet tested for child outcomes

[17] Duncan, G. J., & Magnuson, K. (2013). Investing in preschool programs. *The Journal of Economic Perspectives*, *27*(2), 109–132.

4) Have not made use of validated measures

5) Evidence from a rigorously conducted study (Level 3) provides only partial support for the intervention's model. Programmes falling into this category may have observed some benefits for a subgroup of the target population, but no statistically significant findings were observed for the entire sample. Although such findings are often disappointing, we recognise them to be useful for re-specifying and further testing a programme's logic model.

Because of this diversity within the set of NL2 programmes it is important to emphasise that we do not distinguish levels within this group. Nor do we draw any strong conclusion about the likely effectiveness of an NL2 programme. Some may prove to be very effective or important innovations in the future, while others may not. The names of NL2 programmes are listed in this report for the purposes of audit, but their evidence or implementation requirements are not published.

Level 2: Preliminary evidence

Our threshold for a Level 2 rating requires four criteria to ensure a minimum level of representativeness and validity. Specifically, the evaluation must have observed 1) a statistically significant positive child outcome through 2) the use of independently validated measures involving 3) a study with a minimum of 20 participants that is 4) representative of at least 60% of the original sample. Examples of evaluation designs falling into the Level 2 category include pre/post observational studies involving a single sample, cross-sectional designs comparing two carefully matched samples at a single point in time and comparison group studies not meeting our Level 3 threshold.

We recognise that this minimum threshold represents an initial high bar. However, it is worth noting that organisations involved in the rating and synthesis of programme evidence rarely consider findings from Level 2 studies.[18] This is because limitations of the study design reduce the basis for determining the extent to which a variety of unknown biases may have contributed to a positive result. For this reason, we caution that single sample designs should never be used to estimate a programme's impact through effect size estimates or other statistical means.[19, 20] More often than not, promising findings observed in preliminary pilot studies are not replicated in rigorously conducted randomised controlled trials (RCTs) or quasi-experimental designs (QEDs).[21, 22]

Nevertheless, we believe that Level 2 studies represent an important formative step in programme development. The use of validated measures and a sufficiently large and representative sample provide an objective starting point for investigating a programme's potential for impact. From this standpoint, Level 2 evaluations are particularly useful for exploring a programme's potential impact and determining the sample size for planning more rigorous evaluations.

[18] Kongsted, H. C., & Konnerup, M. (2012). Are more observational studies being included in Cochrane Reviews? *BMC Research Notes*, *5*, 570. http://doi.org/10.1186/1756-0500-5-570

[19] Flay, B. (1986). Efficacy and effectiveness trials (and other phases of research) in the development of health promotion programs. *Preventive Medicine, 15*, 451–474.

[20] Rossi, P. H., Lipsey, M. W., & Freeman, H. E. (2003). *Evaluation: A Systematic Approach*. New York: Sage Publications.

[21] Deeks, J., Dinnes, J., D'Amico, R., Sowden, A. J., Sakarovitch, C., Song, F., et al. (2003). Evaluating non-randomised intervention studies. *Health Technology Assessment, 7*(27).

[22] Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-experimental Designs for Generalized Causal Inference*. Boston, MA: Houghton, Mifflin and Company.

Applying the Level 2 rating

Many of the programmes assessed at Level 2 in this report make use of a pre/post design that allows for meaningful before and after comparisons within a treatment group. The Level 2 threshold also includes cross-sectional designs involving two matched samples measured at one point in time. A rating of 2+ is given to programmes for which its strongest evaluation has observed a statistically significant positive child outcome in a study involving a comparison group, but falling short of a Level 3 rating because of the lack of random assignment or other issues that may have reduced the comparability of the treatment and non-treatment groups. It is worth noting that other evidence synthesis organisations often include EIF Level 2+ evaluations in their summary of a programme's effectiveness, but employ various methods for discounting any benefits that might be observed from such studies.[23,24]

The details of the implementation requirements and evidence of Level 2 and 2+ programmes are also provided in the Programme Reports on our website. However, their biases restrict what can be concluded from their findings, so they are not included as case examples within the main body of the report.

Level 3: Inferring causality

Level 3 represents a significant step in a programme's evidence in that Level 3 evaluations are sufficiently rigorous to determine whether participation in an intervention can be causally linked to improvements in outcomes. Level 3 programmes are often referred to as 'evidence-based' as they represent the point at which a reliable estimate can be made of the difference that a programme, activity or body of spend makes.

A key feature of Level 3 impact evaluations is that there is a reliable counterfactual or expectation of what would happen in the absence of the programme. An equivalent comparison group is important because it enables the evaluation to observe what would have happened in the absence of the programme. Without this counterfactual, trends that may occur naturally (e.g. improvements to child behaviour through maturation) may be falsely attributed to the programme.

The reliability of an impact evaluation is fundamentally linked to the reliability of the comparison group. This is why RCTs are an important (but not the only) method of estimating impact at Level 3, because they provide a robust method of creating treatment and comparison groups that are equivalent in all respects except that one group receives the treatment and the other does not. This is accomplished through the use of random assignment, which theoretically ensures that systematic biases that might otherwise exist between groups are randomly distributed across them. A properly designed and executed process of random assignment gives evaluators no reason to suspect that the treatment and comparison groups should differ in a way that is relevant to the outcomes being measured.

While random assignment provides a straightforward method for obtaining a comparison group with low between-group biases, it can fail when put into practice. This is because it can be difficult to recruit a sufficiently large sample within a relatively short time period and it is not uncommon for treatment and comparison group participants to drop out of the study at different rates. Small sample sizes and high levels of differential drop out often create biases that artificially inflate or deflate the estimated effect in a way that is

[23] Guyatt, G. H., Oxman, A. D., Vist, G., Kunzc, R., Brozeka, J., Alonso-Coello, P., Montorie, V., Akl, E. A., Djulbegovic, B., Falck-Ytter, F., Norris, S. L., Williams Jr., J. W., Atkins, D., Meerpohl, J., & Schunemann, J. (2011). GRADE guidelines: 4. Rating the quality of evidence -- study limitations (risk of bias). *Journal of Clinical Epidemiology, 64*, 407–415.

[24] Aos, S., Lee, S., Drake, E., Pennucci, A., Kilma, T., Miller, M., Anderson, L., Mayfield, J., & Burley, M. (2011). *Return on Investment: Evidence-Based Options to Improve Statewide Outcomes Technical Appendix II Methods and User-Manual.* The Washington State Institute for Public Policy.

not always possible to know or control for. Small samples also reduce the likelihood that the participants are representative of the target population more generally.

In some cases, a well-conducted QED which includes rigorous methods for addressing issues of bias can provide a more pragmatic alternative to an RCT. Examples of such QEDs include propensity score matching, regression discontinuity designs and evaluation designs that take advantage of naturally occurring differences between times and places in the availability of intervention. There is a growing consensus that these kinds of QEDs, when conducted to a high standard, provide a good alternative to RCTs for attributing causality, particularly in instances when random assignment is not practical or feasible. This is recognised in the EIF Standards of Evidence: a sufficiently robust QED evaluation can enable an intervention to achieve the higher strength of evidence ratings, without use of an RCT.

It is recommended that a programme's first rigorous RCT/QED be conducted under ideal circumstances, to control for all threats to internal validity (i.e. potential biases) and increase confidence in the observed outcome.[25] These ideal circumstances should therefore maximise the likelihood of a significant and positive outcome so that causal inferences can be made. Methods for creating ideal circumstances include strictly enforced eligibility criteria, systems for ensuring that the intervention is delivered as it is intended by staff with the right qualifications and the minimisation of other treatments that could potentially contribute to any observed outcome. Rigorous studies conducted under ideal circumstances are frequently referred to as **efficacy** studies, as they are designed to maximise a programme's effectiveness. This might also be thought of as proof of concept for an intervention, achieved in favourable circumstances and subject to further testing in different environments, but indicative of establishing a basic proof of the core proposition.

No effect

Occasionally, a rigorously conducted evaluation will fail to demonstrate any positive benefits for parents or children. In these instances, a rating of 'no effect' (NE) is applied to suggest that a rigorously conducted evaluation has failed to confirm any positive benefits for parents or children.

There are many reasons why a rigorously conducted RCT/QED may fail to confirm significant programme effects, even if previous studies showed findings that were quite promising. The most obvious reason is that the results achieved in earlier, less rigorous studies were biased and driven by factors independent of the programme model. Other reasons for the lack of a significant effect include:

- Difficulties occurring in the implementation of the programme
- An underspecified or mis-specified target population
- Outcome measures that were inadequate for detecting the programme's intended impacts
- A sample size that was too small in the pilot study
- A mismatch between the programme's dose and the needs of the target population.

While non-significant findings from a rigorous evaluation are inevitably disappointing, they do not necessarily mean a programme will never benefit children. They are, nevertheless, often a clear indicator that key aspects of the programme's logic model require re-specification and further evaluation.

[25] Flay, B. R. (1986). Efficacy and effectiveness trials (and other phases of research) in the development of health promotion programs. *Preventive Medicine*, *15*(5), 451–474.

This approach to programme development is consistent with the principle that the primary purpose of evaluation is to improve, not prove.[26,27] It also recognises the need for logic model reconfirmation at all stages of a programme's development. It would therefore be unwise to automatically decommission a programme on the basis of disappointing findings from an initial RCT/QED. However, good programme development on this model would require providers to demonstrate how the findings from the study have been used to modify and improve the programme model. In particular, providers should be able to describe how the findings were used to improve the programme's content, target population specification, referral procedures, dose and key features of the implementation process. Providers should also have clear plans for re-evaluating their programme to determine the extent to which programme refinements have made any difference.

Applying a Level 3 or NE rating

A Level 3 rating indicates that a programme has short-term evidence of improving at least one meaningful child outcome from a rigorously conducted RCT or QED that has reduced all potential biases so that a reliable estimate of the programme's impact can be made. Programmes are awarded a 3+ if they have evidence from at least one Level 3 RCT or QED, along with evidence from other studies meeting the Level 2+ threshold. This report includes the details of all programmes assessed as having Level 3 and 3+ evidence. Information about the programmes' implementation requirements, costs and evidence is provided in the Programme Reports on our website. Some of these programmes have also been chosen as case examples in later chapters of this report.

A rating of NE is applied to programmes with evidence from a rigorously conducted RCT/QED (i.e. Level 3 study) that attempted to verify a child outcome considered within the scope of this review and found no effect. Programmes with some evidence of improving a child outcome within a subgroup of the population, or with evidence of improving a meaningful parent outcome thought to contribute to a child outcome, are otherwise rated NL2 (see above). A rating of NE should not be interpreted to mean that a programme cannot achieve child outcomes with further development, but it does indicate that key aspects of the programme's core assumptions must be investigated and re-confirmed. The implementation requirements and evidence of programmes identified as NE are also included in programme Reports on the EIF website. In some instances, their models are used as case examples of practices that are unlikely to be effective.

Level 4: Replicating results

As mentioned previously, a Level 3 rating is equivalent to what is sometimes known as programme efficacy, the finding that a programme has 'worked' in ideal circumstances. While positive findings from Level 3 study are a good indicator that a programme is capable of providing benefits, it does not mean that these findings will be replicated. Further testing is required to establish an intervention's *external validity*, i.e. the extent to which positive outcomes are likely to be replicated in diverse settings with diverse populations under less than ideal circumstances.

Evaluations that aim to replicate positive outcomes in diverse circumstances are often referred to as **effectiveness** studies, and frequently include less stringent eligibility requirements and fewer quality assurance controls. Hence, effectiveness studies are less likely to observe a positive outcome, but are believed to provide a more genuine estimate of the programme's likely impact in practice. It is nevertheless important to note that evidence from multiple effectiveness trials is not a guarantee that an intervention will always work.

[26] Stufflebeam, D. L., & Shinkfield, A. J. (1985). *Systematic Evaluation: A Self-Instructional Guide to Theory and Practice*. Boston, MA: Kluwer-Nijhoff.

[27] Weiss, C. H. (1997). Theory-based evaluation: Past, present, and future. *New Directions for Evaluation, 76*, 41–55.

Intervention effectiveness is also dependent upon the quality of implementation and the quality of services in the absence of the intervention.

Programmes are awarded a Level 4 here if they have evidence of improving a relevant child outcome from at least two Level 3 RCTs/QEDs. One of these studies must also demonstrate a long-term impact lasting 12 months or more. A 4+ is awarded to programmes that have demonstrated this impact in three or more Level 3 RCTs/QEDs. The details of the evidence and implementation requirements of programmes assessed as having Level 4 or 4+ are provided in the Programme Reports on the EIF website. These programmes are also described in the main body of the report as examples of effective interventions targeting parents with a child between conception and age 5.

Underpinning criteria for assessment of strength of evidence

The strength of evidence ratings represent discrete and hierarchical levels that are useful for describing the strength of an intervention's evidence. In order to assess the rating of a specific programme in relation to this scale, more detailed underpinning criteria are required. As the previous section makes clear, rigorous evaluation is challenging and a variety of practical issues can confound the interpretation of findings. In addition, an intervention's benefits are not always strong or consistent within or between evaluation studies, which also makes it difficult to assign a specific value to an intervention's evidence. Thus, more detailed criteria are required for the purposes of assessment. These criteria are presented in Annex 2.

These detailed criteria are broadly similar to the criteria used by Blueprints for Healthy Youth Development, SAMSHA's National Registry of Evidence-based Programs and Practices, the Office of Youth Justice, the Social Research Unit at Dartington (SRU), HomeVEE (Home Visiting Evidence of Effectiveness) and the Department for Education Commissioning Toolkit. They contain, however, a number of features that are distinctive and require particular note:

1) The EIF strength of evidence rating is primarily based on the intervention's most robust evidence. This means that findings from a good QED or RCT will override a different finding from a pre/post study with no comparison group in determining a programme's strength of evidence rating.

2) To receive a rating of Level 3 or higher, a programme must have evidence from a rigorously conducted RCT or QED demonstrating benefits for children that are consistent, meaningful and practical. Thus, programmes with mixed or inconsistent findings will likely not receive a Level 3 rating, even if their evaluations were conducted to a very rigorous standard.

3) To receive a rating of Level 3 or higher, a programme must have evidence of improving at least one primary child outcome as a main effect. Although we recognise the value of positive findings obtained through subgroup analyses, we view this information as useful for further developing and refining the intervention's logic model, not as sufficient for attributing causality to the intervention.

4) For a rating of Level 3 or higher, intent-to-treat analysis must also be used. Intent-to-treat refers to the retention of participants in the study and final analysis regardless of the amount of the intervention they received. Thus, the pre/post findings relate to all individuals who were intended to be treated, even if some of them never participated in the treatment condition that they were assigned to.

5) The Level 2 category includes programmes with evidence from a good pre/post study involving a single sample, or a cross-sectional design involving sufficiently rigorous methods for recruiting and matching the samples. These samples must also be sufficiently representative of the intervention's

primary target population, meaning that they involve a minimum of participants (completing the study) representing at least 60% of the original sample.

6) The EIF criteria emphasise the use of validated measures for determining child outcomes. Validated measures are psychometric instruments that have test–retest reliability (i.e. there is consistency in an individual's responses to the items when they are repeatedly surveyed) and construct validity, meaning that they have been shown to predict people's behaviour and attitudes in other meaningful contexts.

7) The assessment ratings of programmes with mixed findings from multiple studies are considered on a case by case basis. Factors that influence the rating include the nature of the findings (e.g. have they observed a practical and meaningful effect?) and their significance for children's development. For example, programmes with evidence demonstrating reductions in child maltreatment will likely be rated higher than programmes with significant findings involving only one or two subscales from a self-report measure. Mixed findings are assessed within the context of the study's strength (see point 1) and the balance of evidence across studies.

8) Adaptations of programmes that have established efficacy (Level 3 evidence) are considered as adaptations and will not negate evidence ratings informed by efficacy and effectiveness trials. Mixed evidence will be considered in light of whether the programme has, at one point, achieved an efficacy trial – i.e. demonstrated a significant effect at least once through a Level 3 RCT/QED. Mixed effects are considered in light of a programme's best evidence.

9) For programmes that have not established efficacy, if there are mixed findings from studies that have not achieved Level 3 quality, the most recent one trumps.

Assessing programme costs

Typically, information on market prices or unit costs for early intervention is either unavailable or commercially sensitive, so this data cannot be published by EIF in a robust and consistent way. EIF has therefore developed a new approach that enables programmes to be rated on a scale of relative input costs. When consistently applied, it permits one programme to be compared to another in terms of the resources required to deliver it.

It should be emphasised that the EIF cost rating is not the actual market price that a commissioner would pay for an intervention, although it is a guide to the likely relative cost of the intervention. The actual market price typically includes commercially sensitive information that is not routinely available, so will in practice need to be negotiated between provider and commissioner. We have therefore developed a scale which allows programmes to be summarised in terms of how resource-intensive they are to deliver per child that is supported. Resources, for the purposes of this work, are defined in terms of the inputs, training and activities required to deliver a particular intervention. These include:

- Training fees
- Training time for each practitioner
- Whether booster training is required
- Costs of programme material (initial and ongoing)
- Programme delivery hours for each practitioner involved

- Qualification level of each practitioner involved
- Whether internal and external supervision are required
- Qualifications of internal and external supervisors (if applicable)
- Whether a licence is required
- Typical size of intervention group.

Our methodology combines all of this information into an estimate of total input requirements per child. More detail on the methods used to weight the cost factors can be found in Annex 3. Our estimate is presented on a five-level scale: Low, Medium-Low, Medium, Medium-High and High. This estimate is based on the resources used to implement the programme in the way in which its best impacts were observed.

Each level is associated with an indicative unit cost range. We emphasise these are not actual unit costs, but instead a range indicative of programmes of that type, i.e. those which are similarly resource-intensive in terms of inputs required to run and set up the programme.

TABLE 1: PROGRAMME COSTS RATING

Description of programme and its cost	Cost rating
*This programme is **high cost** to set up and deliver compared to other interventions reviewed by EIF. Programmes of this sort have an indicative unit cost range of **£2,000 or higher**.*	*5*
*This programme is **medium/high cost** to set up and deliver compared to other interventions reviewed by EIF. Programmes of this sort have an indicative unit cost range of **£1,000 to £2,000.***	*4*
*This programme is **medium cost** to set up and deliver compared to other interventions reviewed by EIF. Programmes of this sort have an indicative unit cost range of **£500 to £999.***	*3*
*This programme is **medium/low cost** to set up and deliver compared to other interventions reviewed by EIF. Programmes of this sort have an indicative unit cost range of **£100 to £499.***	*2*
*This programme is **low cost** to set up and deliver compared to other interventions reviewed by EIF. Programmes of this sort have an indicative unit cost range of **£100 or lower.***	*1*

Summary of key points

In this chapter we describe our approach and methods for assessing the strength of evaluation evidence and costs for 75 individual programmes relevant to the UK context that aim to support young children's development through activities that improve parent–child interaction. For this exercise, we define programmes in terms of specific packages of activity intended for specific population groups in terms of child age, level of need and primary outcome. These interventions were first identified in the Best Start at Home review and specifically aim to support children's attachment security, behavioural self-regulation and/or cognitive development.

Our methods include our Standards of Evidence that emphasise the importance of evaluation designs that provide an unbiased and rigorous estimate of impact, but also recognise other forms of evaluation as necessary for understanding how and why a programme might work. We have also developed a new approach to compare programmes in terms of the resources required to deliver them.

In the following chapters, we describe the findings from this assessment exercise, first in aggregate and then individually for the domains of attachment security, behavioural self-regulation and early cognitive development. When reviewing these findings, there are three principles first emphasised in this chapter that are important to keep in mind.

- There is always room for improvement and evidence is never static. This means that the ratings we report in the following chapters will very likely change as programmes continue to develop and evaluate themselves.
- Second, the EIF assessment ratings are not a kite mark, nor a replacement for professional judgement. While we highlight some programmes as examples of what has been achieved through early intervention, we are by no means recommending that these specific interventions necessarily be commissioned.
- Evidence of effectiveness is useful for guiding commissioning decisions, but by itself is not a sufficient basis for commissioning. The evidence and cost ratings we present here are just part of a much bigger picture that involves in-depth knowledge of local resources and the needs of the population.

Chapter 3

Aggregate findings

This chapter considers the strength of evidence and costs of 75 interventions assessed with the methodologies described in the previous chapter. All 75 aim to support children's development through parent–child interaction in at least one of three domains: attachment security, behavioural self-regulation and early language and cognitive development.

Table 2 reports all of the programme and ratings, structured by primary outcome. Subsequent sections of this chapter describe the sample in more detail and consider how the different features of the programmes are related.

TABLE 2: STRENGTH OF EVIDENCE RATING FOR 75 PROGRAMMES ASSESSED[28]

Programme Name	Evidence Rating	Cost Rating
Attachment		
Assertive Outreach Model, including Baby Express	NL2	N/A
Baby Express	NL2	N/A
Baby Steps	NL2	N/A
Child First	3	5
Child-Parent Psychotherapy	3+	Missing
Circle of Security (group)	2	2
Circle of Security (home visiting)	NL2	N/A
Families and Schools Together (FAST) Baby	NL2	N/A
Family Action's Perinatal Support Project (evolved from Newpin)	NL2	N/A
Family Foundations	4	1
Family Nurse Partnership (FNP)	4+	5
Infant-Parent Psychotherapy	3+	Missing
Maternal Early Childhood Sustained Home-visiting (MECSH)	NE	4
Mellow Babies	NL2	N/A
Mellow Bumps	NL2	N/A
Mellow Toddler (formerly Mellow Parenting)	2	2
Modified Interaction Guidance	NL2	N/A

[28] The more detailed information underpinning these ratings and assessments will be made available on the EIF website in a set of Programme Reports. We are not publishing Programme Reports about the programmes rated NL2 on strength of evidence, nor are we publishing their estimated resource cost rating here, although the data is used in the aggregate analysis.

My Baby's Brain	NL2	N/A
Nobody Slips Through the Net/Keiner Fallt Durchs Netz	2+	2
Parent Infant Project (PIP)	NL2	N/A
Parents 1st Community Parent Volunteer Peer Support Programme	NL2	N/A
Play and Learning Strategies (PALS)	2+	2
Sing & Grow Programme	NL2	N/A
Social Baby Approach	NE	Missing
The Newborn Behavioral Observations (NBO) System	NL2	N/A
Toddler-Parent Psychotherapy	2+	Missing
Video-feedback Intervention to Promote Positive Parenting (VIPP)	NL2	N/A
Watch, Wait, Wonder	2+	Missing
Behaviour		
Active Parenting	NL2	N/A
Dare to be you	2+	Missing
Empowering Parenting and Empowering Communities (EPEC)	3	1
Enhancing Adoptive Parenting	NL2	N/A
Enhancing Parenting Skills programme (EPAS)	NL2	N/A
Families and Schools Together (FAST) Preschool	2	Missing
Family Check-Up (FCU)	3+	2
Family Links Nurturing Programme	NE	1
Helping the Noncompliant Child	3	3
Hitkashrut	3	2
Incredible Years Preschool	4+	2
Incredible Years Toddler	2+	2
Listening to children (LTC)	NL2	N/A
ParentCorps	3+	2
Parenting Wisely	NL2	N/A
Parents as Partners (formerly known as Supporting Father Involvement)	NL2	N/A
Parents Plus Early Years	2+	1
Solihull Approach Parenting Group	2	1
Strengthening Families Program	NL2	N/A
The New Forest Parenting Programme	3+	3
Toddlers without tears	NE	Missing

Triple P Discussion Groups	3+	1
Triple P Group	3+	1
Triple P Primary Care	NL2	N/A
Triple P Selected Seminar Series	NL2	N/A
Triple P Standard	3	2
Video-feedback Intervention to Promote Positive Parenting – Sensitive Discipline (VIPP-SD)	NL2	N/A
Cognitive		
Bookstart Baby	NL2	N/A
Bookstart Corner	NL2	N/A
Born to Move	NL2	N/A
Getting Ready	2+	Missing
Home Instruction Program for Preschool Youngsters (HIPPY)	2+	3
It Takes Two to Talk	NL2	N/A
Kaleidoscope Play & Learn	NL2	N/A
Learning Together Programme – Early PEEP: 1s Level	NL2	N/A
Learning Together Programme – Early PEEP: 2s Level	NL2	N/A
Learning Together Programme – Early PEEP: Baby PEEP	NL2	N/A
Learning Together Programme – Foundation PEEP: 3s Level	2+	1
Learning Together Programme – Foundation PEEP: 4s Level	2+	1
Let's Learn Language	NE	1
Let's Play in Tandem	3	3
Lidcombe Program	2+	2
Parents as (first) Teachers (PAFT)	2+	4
Raising Early Achievement in Literacy Project (REAL)	3	3
Reach out and Read (ROR)	2+	2
TalkAbility	NL2	N/A
Target Word	NL2	N/A

This chapter summarises first what is known in aggregate about these programmes first in terms of their evidence and then in terms of their resource costs. Strength of evidence and cost ratings are also provided for 40 individual programmes that were either rated as having Level 2 or higher evidence (see previous chapter) or have good evidence of no effect (NE) on any child outcome (see Annex 2). It is important to keep in mind that an NE rating does not necessarily mean that an intervention does not work, but it is an indication that further programme development is likely required.

It is important to remember that this sample of programmes is broad and informative but is not representative of all of Early Intervention. There are two reasons for this:

1) The scope of the review only included programmes that aimed to improve the interaction between a parent and child from conception to age 5.

2) Not all such programmes are included. As mentioned in the previous chapter, the review was not exhaustive. The search process also favoured programmes with published evaluation evidence, which means that many programmes that have not yet completed an evaluation will have likely been missed.

It should therefore be kept in mind that this analysis applies to the programmes assessed as part of this review, and wider generalisations should be made very cautiously and interpreted as such.

Programme Characteristics

Overview of programme characteristics

- Provision is **fairly evenly split** in terms of the **level of need of the target population**, with **choices available for each level of need**.
- The **most common** delivery format is **group-based sessions**.
- **Behaviour and cognitive programmes** are more likely to be delivered in **group-based sessions** than via other methods; **attachment programmes**, however, are more likely to be delivered through **home visits**.

Table 3 summarises the characteristics of the programmes in terms of the primary outcomes they aim to achieve, the classification of their level of need, the children's age group, the strength of evidence and cost**. It should be kept in mind that these categories represent the best fit for the programme's best evidence.** For example, if a programme's best evidence involves an attachment-related outcome, for children with a mean age of six months at the start of the intervention in families living in disadvantaged populations, the programme would be classified as an attachment intervention, at the Targeted-Selective level for children in infancy.

TABLE 1: CHARACTERISTICS OF ASSESSED PROGRAMMES

Interventions	*N*	%
Child Outcome Domain		
Attachment	*28*	*37.3%*
Behaviour	*27*	*36.0%*
Cognitive	*20*	*26.7%*
Classification (Level of Need)		
Universal	*19*	*25.3%*
Targeted-Selective	*28*	*37.3%*
Targeted-Indicated	*28*	*37.3%*
Delivery Model		
Promotion +	*7*	*9.3%*
Group	*35*	*46.7%*

Home Visiting	*12*	*16.0%*
Individual	*21*	*28.0%*
Children's Age		
Antenatal or perinatal	*8*	*10.7%*
Infancy	*23*	*30.7%*
Toddlerhood	*20*	*26.7%*
Preschool	*24*	*32.0%*
Strength of Evidence Rating		
NE	*5*	*6.7%*
NL2	*35*	*46.7%*
2	*18*	*24.0%*
3	*14*	*18.7%*
4	*3*	*4.0%*
Cost Rating (where available)		
Low	*20*	*26.7%*
Medium-Low	*26*	*34.7%*
Medium	*9*	*12.0%*
Medium-High	*3*	*4.0%*
High	*2*	*2.7%*
Missing	*15*	*20.0%*

Attachment programmes have the primary aim to support children's attachment security through improved parental sensitivity.
Behaviour programmes have the primary aim to improve children's behaviour by teaching parents behavioural management strategies and methods for communicating effectively with their child.
Cognitive programmes have the primary aim to support children's cognitive development by teaching parents age-appropriate methods for structuring or 'scaffolding' learning tasks.

Universal interventions can be delivered through universal services to all families.
Targeted-Selective programmes are intended for families where there is a demographic risk (e.g. teen parenthood, economic disadvantage, etc.)
Targeted-Indicated programmes are offered to families where the parent or child has a pre-identified problem which may or may not require ongoing treatment.

Promotion+ programmes are promotional activities and/or of short duration lasting five or fewer weeks.
Group programmes are delivered to groups of parents from separate families.
Home Visiting programmes were developed specifically to be delivered in the home and address a range of child and parent outcomes. Home Visiting programmes are typically offered on the Targeted-Selective or Targeted-Indicated level and take place for a relatively long period of time.
Individual programmes are provided to families on a one-to-one basis.

Antenatal/Perinatal programmes begin before birth and/or continue for some time afterwards.
Infancy programmes target children aged 0–12 months.
Toddlerhood programmes target children aged 12 months to 3 years.
Preschool programmes target children aged 3–5 years.

Strength of evidence ratings are described in Chapter 2. Level 4 programmes have the strongest evidence.
Cost ratings are described in Chapter 2, and refer to the estimated resources needed to deliver a programme.

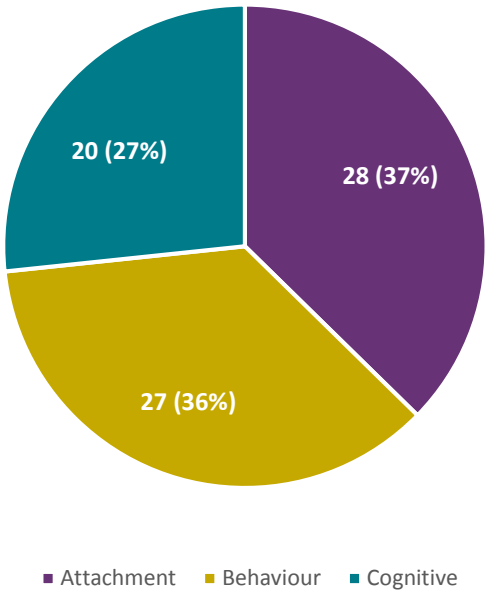
Primary Child Outcome

While the majority of interventions identified in the review addressed more than one parent and child outcome, their primary outcomes were easily categorised into one of three broad domains:

- Interventions that have the primary aim to support children's **attachment** security through improved parental sensitivity
- Interventions that have the primary aim to improve children's **behaviour** by teaching parents behavioural management strategies and methods for communicating effectively with their child
- Interventions that have the primary aim to support children's cognitive development by teaching parents age-appropriate methods for structuring or 'scaffolding' **learning** tasks.

Figure 4 provides an overview of the distribution interventions in terms of their ***primary*** child outcome domain.

Figure 4: Programmes by primary outcome domain (n=75)



Classification (level of need)

Figure 5 summarises the interventions in terms of the level of need at which the programme's best evidence provides evaluation of impact:

- 19 (25%) were categorised as Universal, meaning that they can be delivered through Universal services to all families
- 28 (38%) were identified as Targeted-Selective programmes, meaning that they are intended for families where there is a demographic risk (e.g. teen parenthood, economic disadvantage, etc.)
- 28 (38%) were developed as Targeted-Indicated programmes, meaning that they should be offered to families where the parent or child has a pre-identified problem which may or may not require ongoing treatment.

Figure 5: Programmes by level of need classification (n=75)

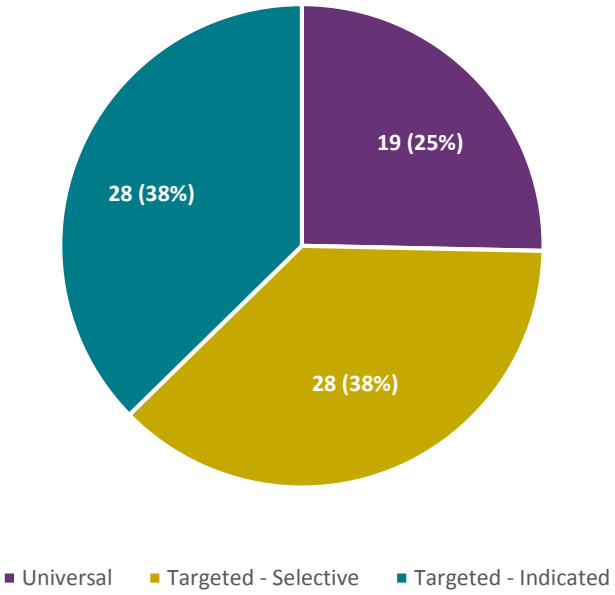
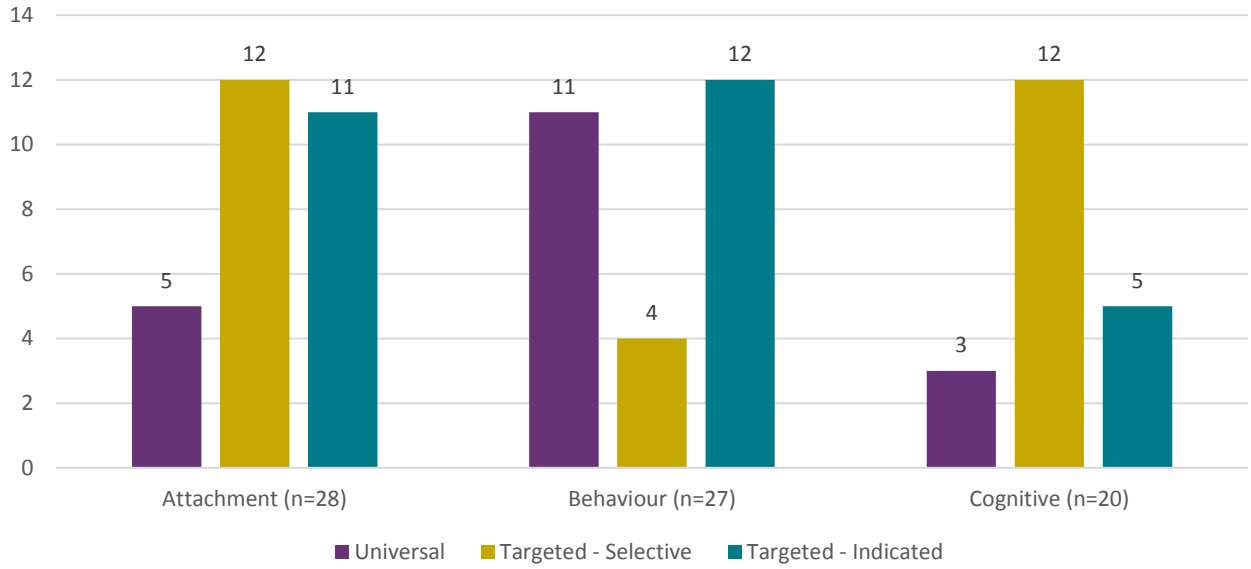


Figure 6 explores the three primary outcome domains in terms of the distribution of their classification types. Figure 6 suggests that a greater proportion of behavioural and attachment interventions are likely to be offered at the Targeted-Indicated level (44% and 39% respectively) than are programmes addressing children's cognitive development (25%). However, proportionately more (60%) cognitive programmes are available as Targeted-Selective interventions. This is likely because the majority of cognitive interventions target families on the basis of their socio-economic status, as opposed to any individual-level characteristics. The reasons for this will be discussed in greater depth in Chapter 6.

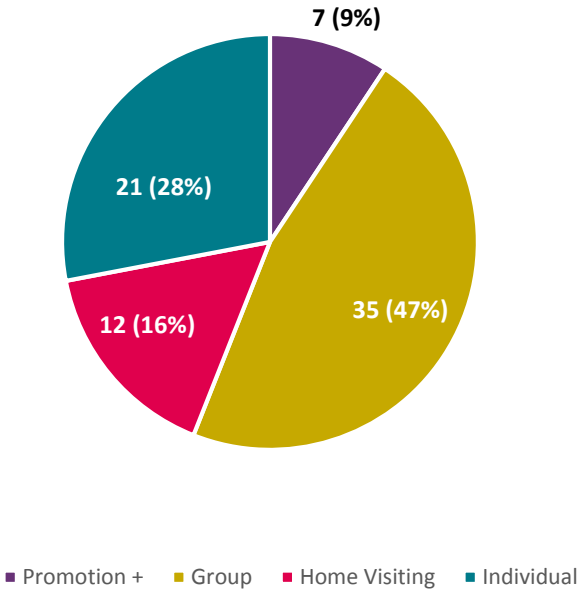
Figure 6: Distribution of level of need within child outcome domains (n=75)



Delivery model

Figure 7 shows the distribution of interventions in terms of their four delivery model categories.

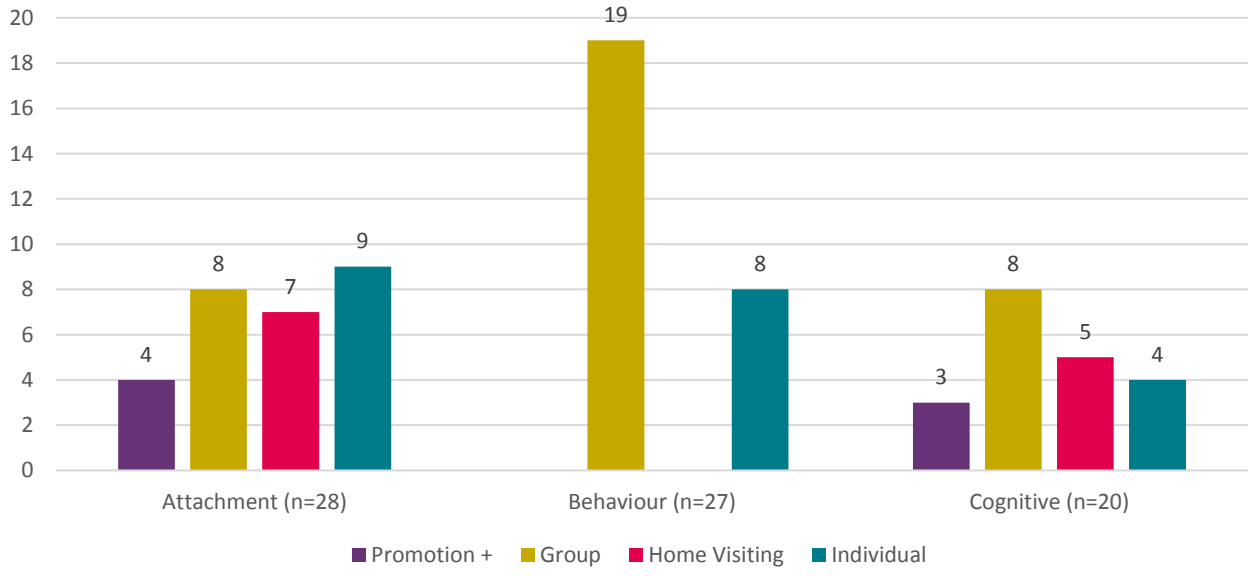
Figure 7: Programmes by delivery model (n=75)



- 7 (9%) of interventions are Promotion+. These are programmes of short duration (five contacts or less) that also provide promotional materials, which may include pamphlets, newsletters or books.
- 35 (47%) are offered to groups of parents from separate families
- 12 (16%) were developed specifically to be delivered in the home
- 21 (28%) are delivered to families individually.

Figure 8 illustrates the distribution of delivery models within the three outcome categories.

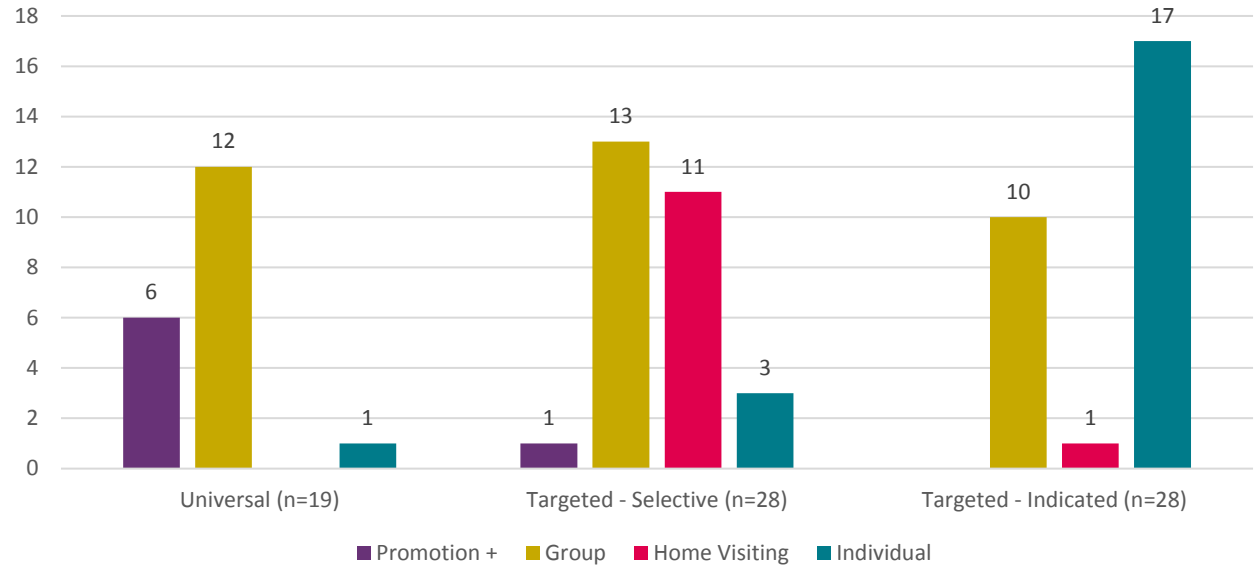
Figure 8: Distribution of delivery model within child outcome domains (n=75)



Group-based interventions were the most frequently used delivery model in the behaviour and cognitive domains. By contrast, there were slightly more individual interventions amongst the programmes targeting attachment related behaviours.

The relationship between programme classification and delivery model is illustrated in Figure 9, which shows that Universal programmes tend to be offered through group-based and Promotion+/short-duration delivery models (18 or 95%), Group based activities are common at all levels and that Targeted-Indicated activities tend to be individual.

Figure 9: Distribution of delivery model within each level of need (n=75)



Children's age

Figure 10: Programmes by children's age at start of programme (n=75)

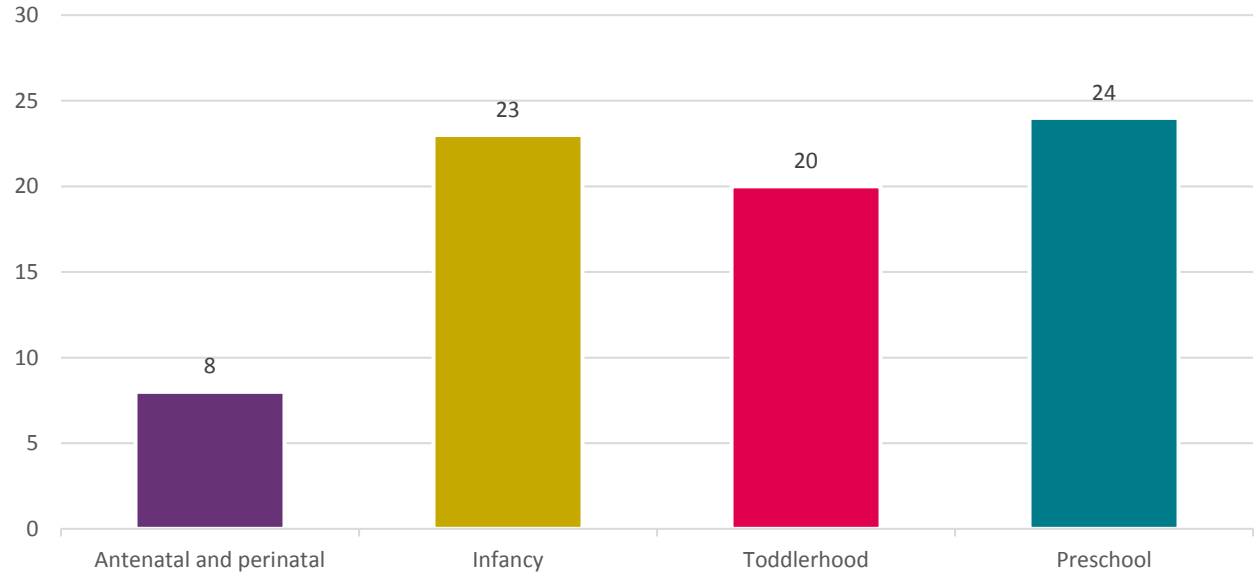
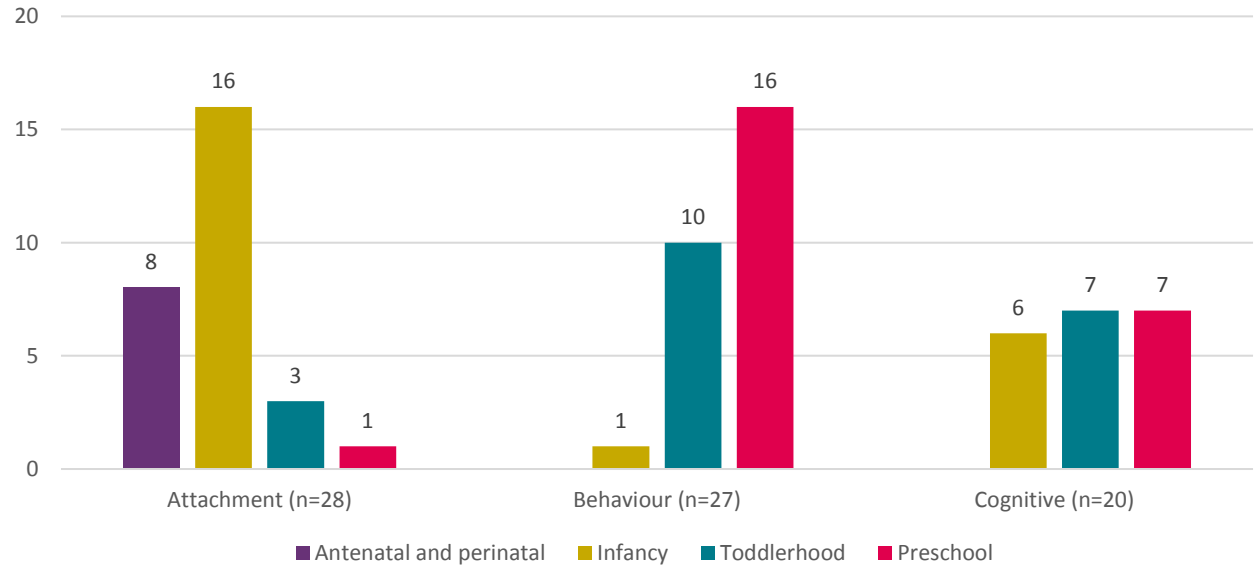


Figure 10 illustrates the distribution of programmes by the age of children. There are a number of ways of classifying programmes in terms of age. We have used the average age of the children at the time the programme began in the studies constituting the programme's best evidence, to focus attention on what is

well evidenced, but other approaches are possible. In these terms, 11% (8) of the programmes began during the antenatal (pre-birth) or prenatal (pre- and post-birth) period. The largest category of programmes were available to families with an infant (23 or 31%), followed by families with a toddler (20 or 27%) and preschooler (24 or 32%). In fact, only one programme in this review was offered exclusively during the antenatal period. This is not surprising, as the original scope specified programmes which aim to support children's social, emotional and physical development. Thus, the majority of antenatal programmes, which primarily target maternal health and child birth outcomes, were not assessed as part of this review.

Figure 11 shows the distribution of the programmes' target age groups within each of the child outcome domains. Most of the attachment programmes identified (24 or 86%) start during the antenatal period or infancy in comparison to cognitive programmes (6, 30%).

Figure 11: Distribution of children ages within outcome domain categories (n=75)



Evidence and costs

Overview of findings on the evidence base and cost of the identified programmes

- Approximately **one quarter** of the programmes identified in this review are **evidence-based** in terms of being underpinned by robust studies that have been classified as Level 3 or higher
- Many programmes across the sample are estimated to have relatively low cost to set up and deliver.

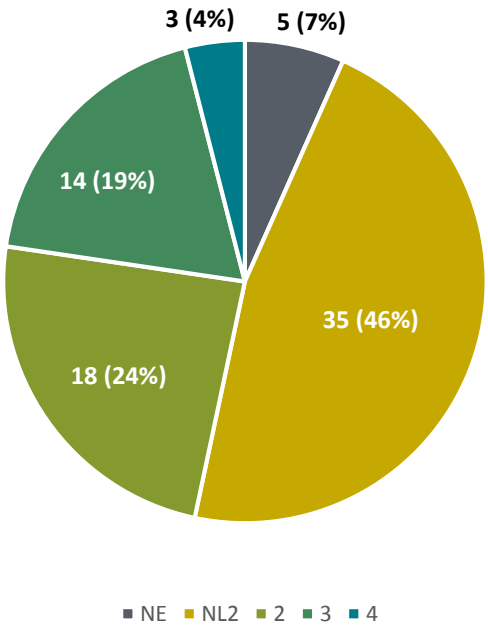
Strength of Evidence

The evaluation evidence of 75 interventions was assessed against in terms of strength of evidence, through the methodologies described in Chapter 2. The EIF standards distinguish programmes with preliminary (Level 2), good (Level 3) and established (Level 4) evidence. Programmes not meeting the minimum threshold for a Level 2 rating are categorised as NL2. Those with good evidence (meeting our Level 3 threshold) of no effect on a child outcome are identified as NE.

Figure 12 provides an overview of the distribution of the strength of evidence in terms of these levels.

- 3 (4%) of the programmes met the Level 4 threshold, meaning that they have evidence from at least two rigorously conducted studies suggesting improvements for parents and children in the short- and long-term.
- 14 (19%) have initial evidence of improving child outcomes from at least one rigorously conducted impact evaluation. All 14 are randomised controlled trials (RCTs). There are no quasi-experimental designs (QEDs) in this group.
- 18 (24%) have more preliminary evidence of improving child outcomes through a comparison group study or a pre/post pilot evaluation.
- 35 (46%) additional programmes did not meet the EIF Level 2 threshold (NL2).
- 5 programmes (7%) were judged as NE, meaning they had evidence from a rigorously conducted study observing no effect on any measured EIF child outcome.

Figure 12: Programmes by level of evidence (n=75)



These findings suggest that 17 (23%) of the programmes could be considered evidence-based -- in the sense of having evidence from at least one rigorously conducted RCT or QED observing statistically significant improvements in child outcomes. This proportion is not surprising given the challenges involved in developing and evaluating interventions for families with young children.[29] It often takes a programme many years to confirm the details of their programme model and the assessment reports make clear that the majority of programmes with initial or established evidence existed for at least 12 years and in many cases much longer.

[29] Barlow, J., Kirkpatrick, S., Wood, D., Ball, M., & Stewart-Brown, S. (2007). *Family and Parenting Support in Sure Start Local Programmes.* London: NESS.

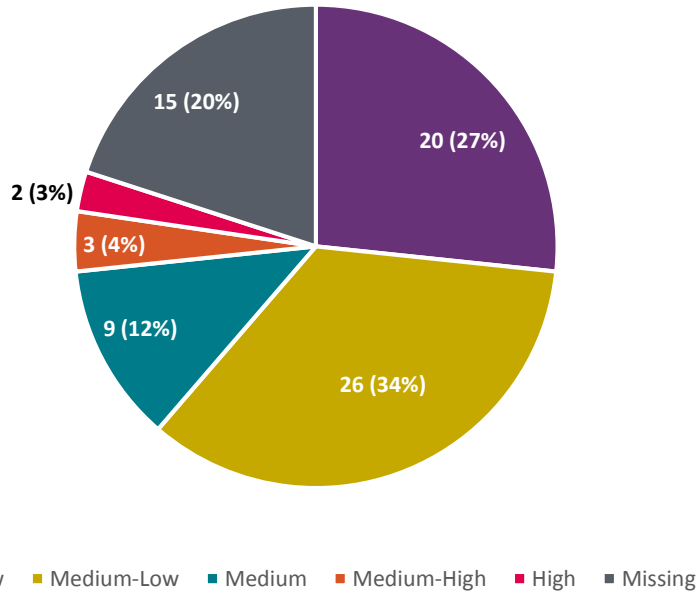
Cost

Sixty of the 75 programmes assessed in this review (80%) provided detailed information about the resource requirements for effective implementation, as described in the previous chapter.

This information was then used to estimate the programme's total input requirements per child, which are represented on a five-level scale: Low, Medium-Low, Medium, Medium-High and High. The details of this cost scale and our cost assessment process are described in Chapter 2.

We emphasise here that our cost ratings are not a measure of programmes' actual unit costs or market prices, nor can they provide information about net cost-benefit measures. However, the ratings do enable programmes to be compared to each other on the basis of their resource requirements. Figure 13 summarises the distribution of the cost ratings resulting from this resource cost assessment.

Figure 13: Programmes by cost rating (n=75)



- 20 (27%) were assessed as low cost to set up and deliver compared to other programmes, with an indicative unit cost range of £100 or lower.
- 26 (34%) were assessed as medium to low cost to set up and deliver compared to other programmes, with an indicative unit cost range of £100 to £499.
- 9 (12%) were assessed as medium cost to set up and deliver compared to other programmes, with an indicative unit cost range of £500 to £999.
- 3 (4%) were assessed as medium to high cost to set up and deliver compared to other programmes, with an indicative unit cost range of £1,000 to £2,000.
- 2 (3%) were assessed as high cost to set up and deliver compared to other programmes, with an indicative cost range of £2,000 or higher.
- 15 (20%) did not provide cost information, so a cost estimate is currently not possible.

Table 4 below reports the average delivery features of programmes at each cost rating, in order to help explain the underpinning assumptions of the model. These differences are implied by the estimation model as set out in Annex 3.

TABLE 4: AVERAGE PROGRAMME CHARACTERISTICS BY EIF COST RATING (n = 75)

	Cost Rating				
	Low	**Medium-low**	**Medium**	**Medium-high**	**High**
Lead practitioner needs post-graduate qualification	5%	36%	11%	33%	50%
Avg. number of practitioners	1.4	1.6	1.4	1.0	1.5
Avg. number of days training for lead practitioner	2.0	4.1	5.2	19.9	22.9
Avg. training fees (£)	£557	£1,115	£1,092	£2,300	£10,667
Avg. programme material costs (£)	£64	£189	£188	£10	£50
Avg. intervention duration hours	14.6	26.2	21.6	29.0	60.1
Licence is required	5%	28%	56%	67%	100%
External supervision is required	5%	54%	61%	0%	50%
Internal supervision is required	48%	70%	61%	100%	100%
Booster training is required for practitioners	38%	60%	78%	67%	100%
Avg. family/practitioner ratio	8.33	3.84	1.09	1.00	0.75

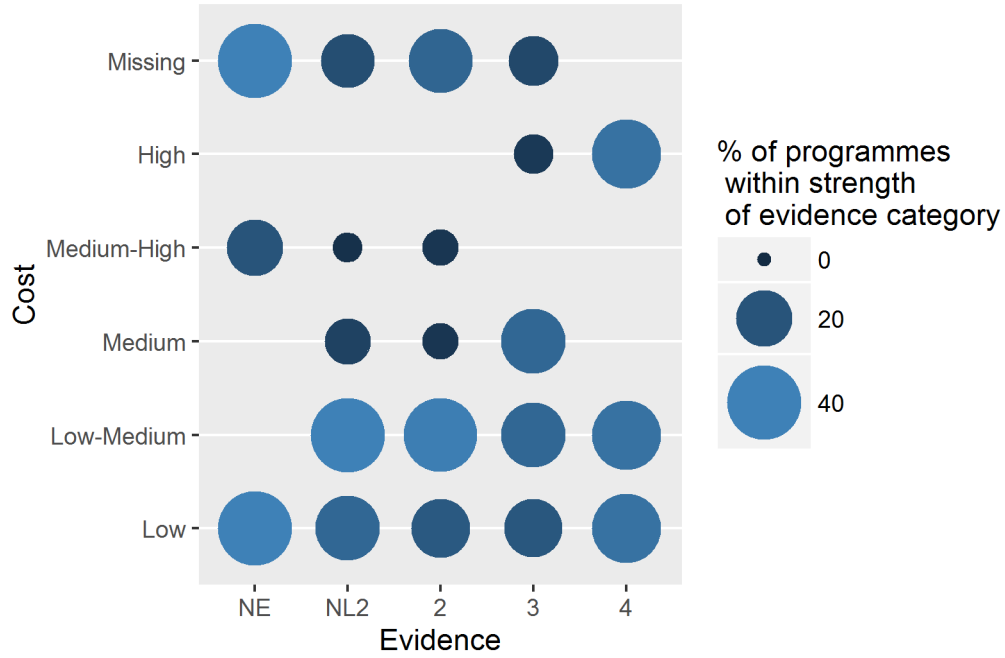
It can be seen that:

- Higher-cost programmes do not generally involve more practitioners than lower-cost programmes, but they do involve lead practitioners who are more likely to be highly qualified and who have undergone more extensive programme training.
- Higher-cost programmes generally have higher training fees, but not higher programme material costs.
- Higher-cost programmes are more likely to require a licence, internal supervision and periodic booster training for practitioners.
- Higher-cost programmes tend to involve a more intense 'dose', both in terms of higher total hours of intervention with each family, and in terms of fewer families per practitioner.

Programme costs and strength of evidence

Figure 14 shows the distribution of the programme cost ratings within each level of evidence. The size and colour of each bubble represents the proportion of programmes within that evidence category which received that cost rating. Lighter and larger bubbles represent greater proportions. For example, the bottom left bubble shows that 40% of programmes rated NE on strength of evidence were judged to be low cost.

Figure 14: Distribution of costs within evidence categories (n=75)



As Figure 14 makes clear, there is a fairly even distribution of low- and high-cost programmes within each level of evidence, with the exception of the NE category, which has an over-representation of missing data. This is not surprising, given that some of the NE programmes are no longer running and therefore were not able to provide cost information.

It is also not surprising that the two most expensive programmes have more established evidence. As the subsequent chapters discuss, both of these programmes are home visiting interventions that are delivered by highly qualified staff over a long period of time to highly vulnerable families. The programme duration and staff qualifications contribute to their expense and the vulnerability of the families they reach increases the magnitude of their impacts. While the costs of both of these programmes are high, their outcomes are substantial and include reductions in child maltreatment and improvements in early cognitive development. Both of these programmes target the attachment relationship and are described in greater detail in Chapter 4.

Relationship between evidence, cost, and programme characteristics

Overview of findings on the relationship between programme characteristics, evidence and cost in this sample

Evidence:

- There is a greater proportion of evidence-based programmes that primarily target children's behaviour in comparison to programmes primarily targeting attachment security or children's early cognitive development.
- Despite the relatively low number of interventions receiving an EIF rating of 3 or 4, there are nevertheless several evidence-based programmes within each level of need and delivery model to choose from.
- The evidence-base for Universal programmes is currently the weakest (though there are evidence-based programmes available).
- Targeted Indicated programmes operating through individual therapy and home visiting delivery mechanisms tend to have a stronger evidence base than less intensive programmes.

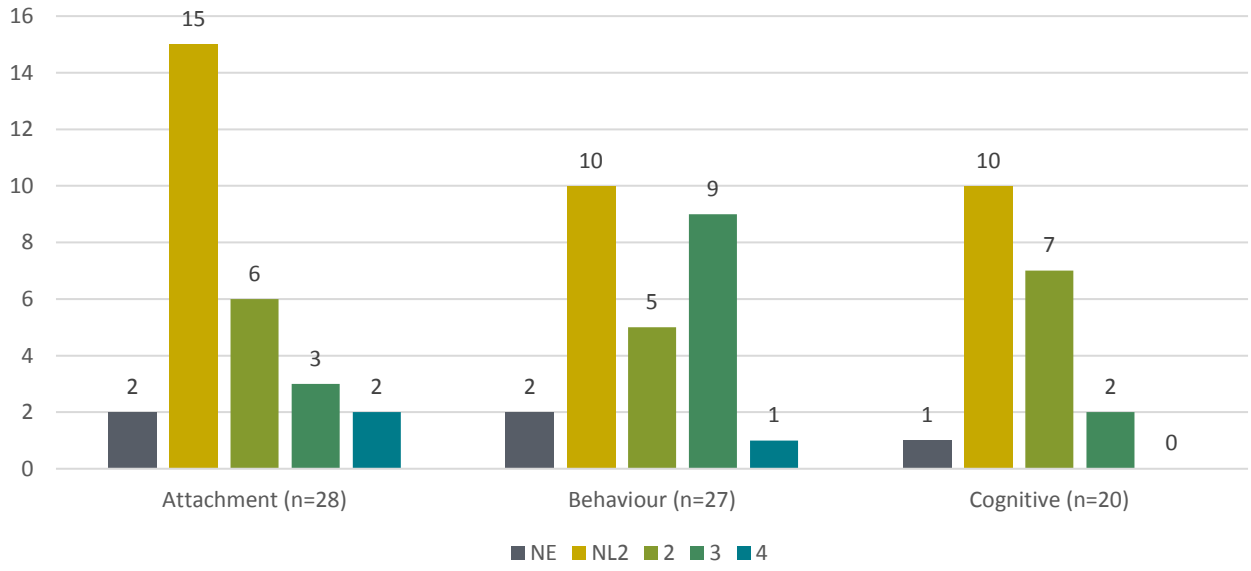
Costs:

- There are relatively low-cost options available within each level of need classification, and each delivery model category.
- There are well-evidenced programmes which are relatively low cost.
- There are relatively expensive and moderately expensive programmes which do not as yet have any direct evidence of effectiveness.
- Evidence-based interventions tend to cost more than programmes with less than Level 3 level evidence. However, there are many low-cost evidence-based programmes to choose from.

Child outcome domain

Figure 15 reports the distribution of evidence within each of the outcome categories.

Figure 15: Distribution of evidence within programme outcome domains (n=75)



Five (18%) interventions aiming to support the attachment relationship and 10 (37%) interventions aiming to improve children's behaviour could be considered evidence-based in comparison to two (10%) of the programmes aiming to support children's early learning.

Figure 16 provides an overview of the distribution of programme costs within each child outcome domain.

Figure 16: Distribution of cost ratings within programme outcome domains (n=75)

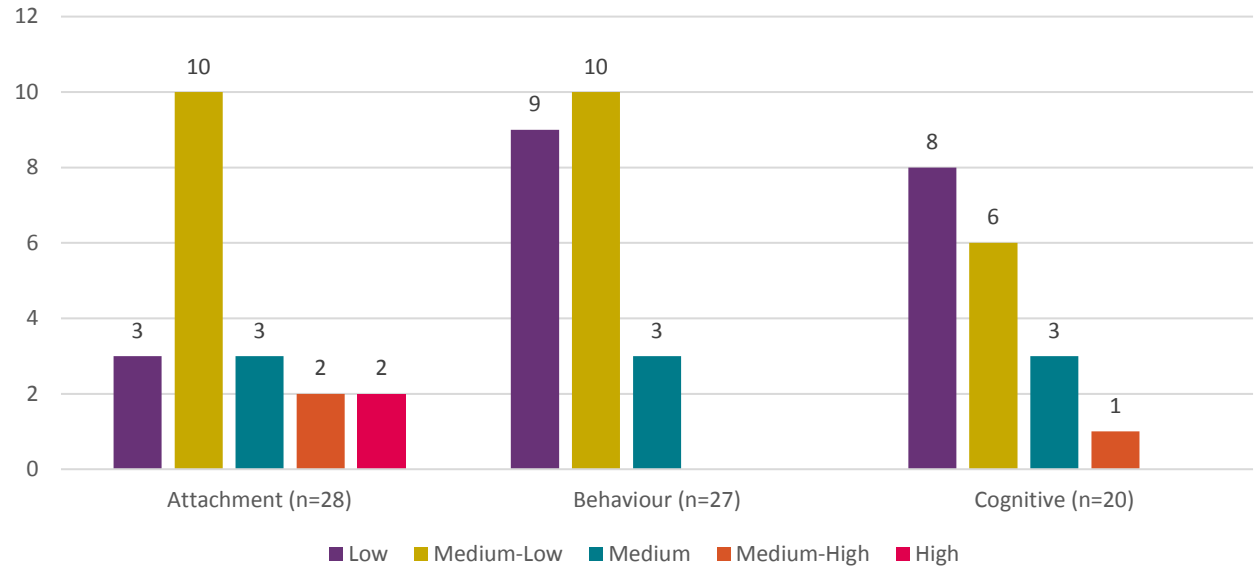
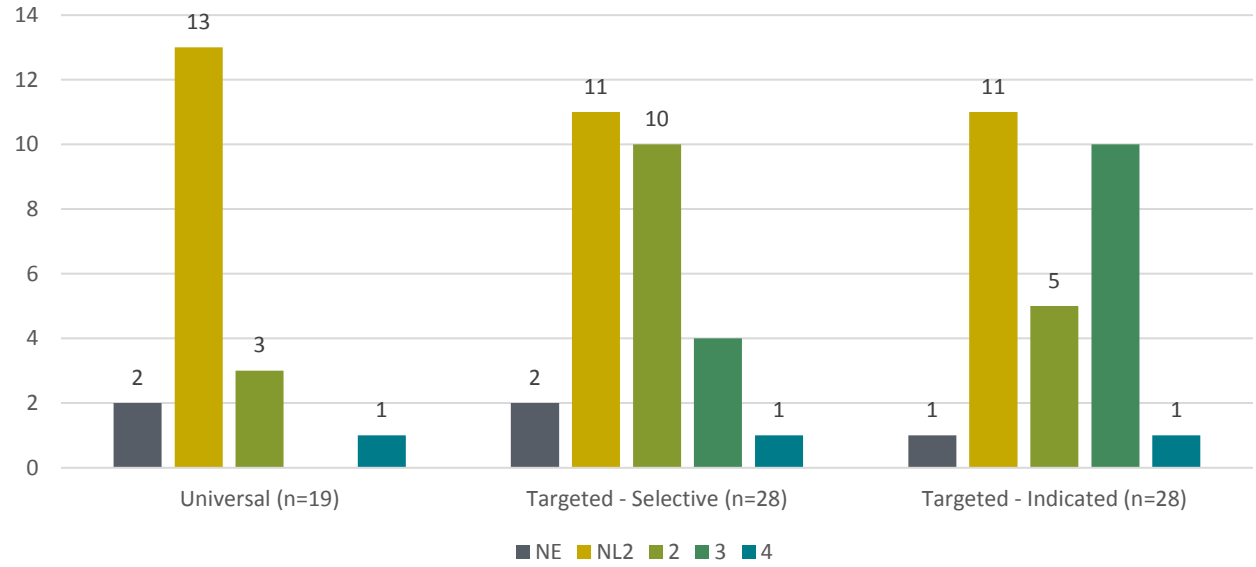


Figure 16 suggests that attachment-based programmes tend have higher costs, although it should be noted that 29% did not provide cost data. The higher cost of attachment-based programmes may also reflect the fact that a greater proportion of them are delivered through home visiting which is frequently more resource intensive to deliver. The high resource costs of home visiting programmes are shown in Figure 19.

Classification (level of need)

Figure 17 summarises the distribution of evidence within each need classification category.

Figure 17: Distribution of evidence within level of need categories (n=75)



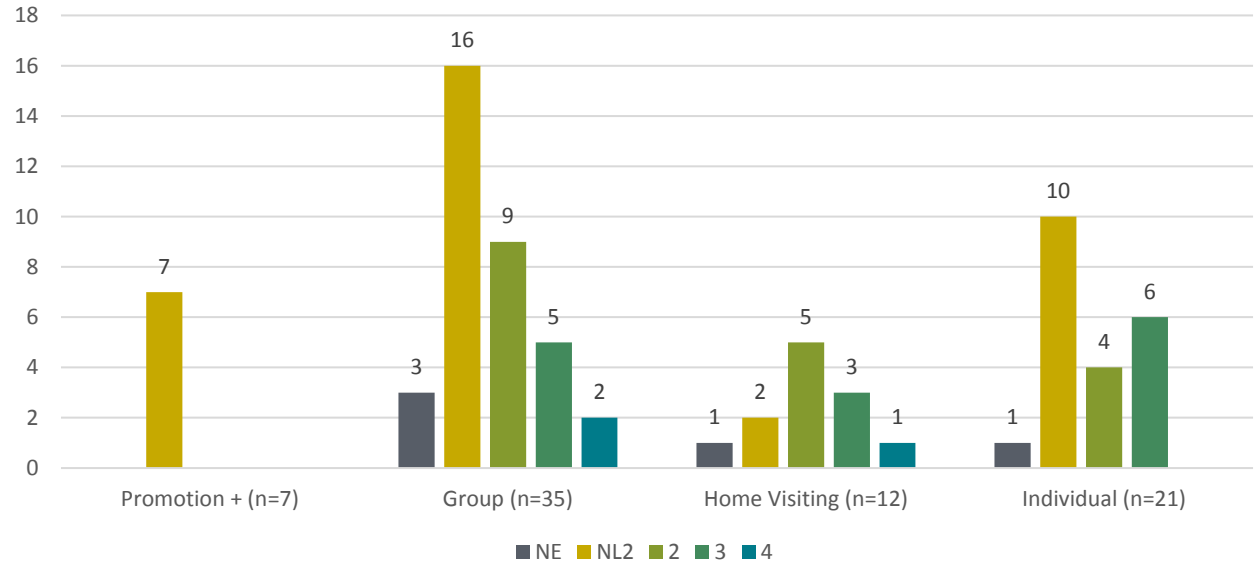
As Figure 17 shows there are proportionally more evidence-based interventions within the Targeted-Indicated (11, or 39%) and Targeted-Selective (5, or 18%) categories than there are within the Universal category (1, or 5%). While the reasons for this will be explored in greater depth in subsequent chapters, Targeted-Indicated interventions are typically offered to families facing more specific and complex challenges. When effective, Targeted-Indicated programmes produce changes that are often greater in magnitude and therefore easier to measure. By contrast, Universal interventions are available to all parents who may or may not need them – so change is less likely and often more difficult to detect.

Universal programmes tended to be less expensive, with all programmes for which we have cost data assessed as low or medium-low cost. Interestingly, 78% of the Targeted-Indicated interventions were either low or medium-low cost. Six of the Targeted-Indicated programmes could be considered both low cost and evidence-based, and all level of need categories had at least one programme that was low cost and evidence-based.

Delivery model

Figure 18 shows the distribution of evidence within each delivery model category.

Figure 18: Distribution of evidence within delivery model categories (n=75)

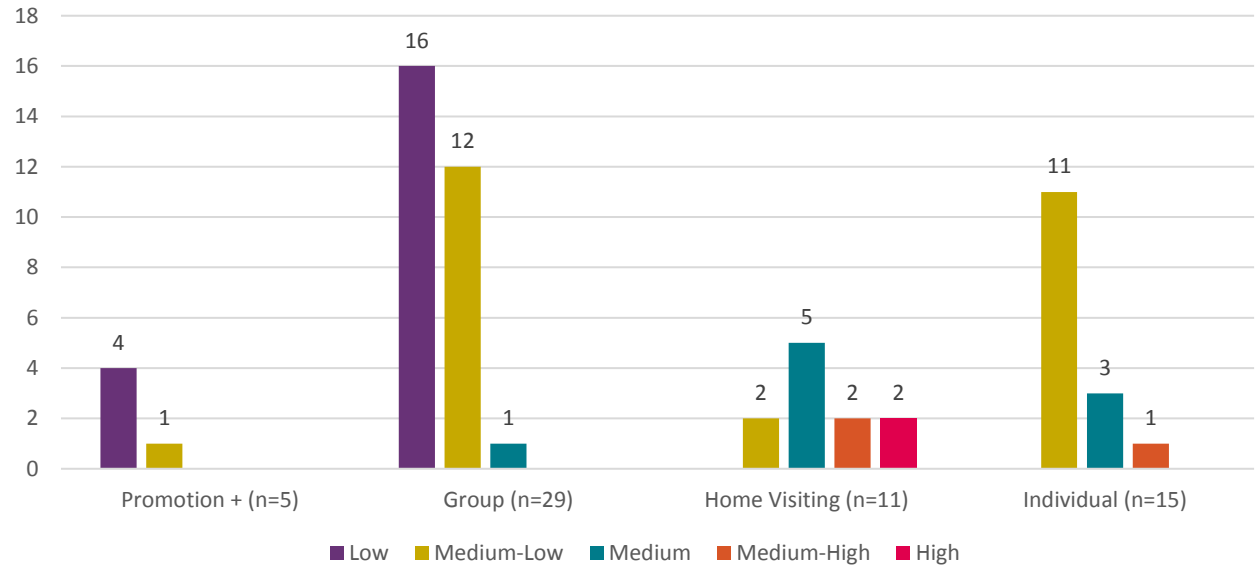


This distribution is broadly similar to that observed within the level of need classification categories, as more targeted programmes were more likely to be evidence-based. Specifically:

- No Promotion+ programmes were evidence-based
- 7 (20%) of the group-based programmes were evidence-based
- 6 (28%) of the individual programmes were evidence-based
- 4 (33%) of the home visiting programmes were evidence-based.

Figure 19 shows the distribution of cost ratings for each delivery model.

Figure 19: Distribution of cost ratings within delivery model categories (n=60)

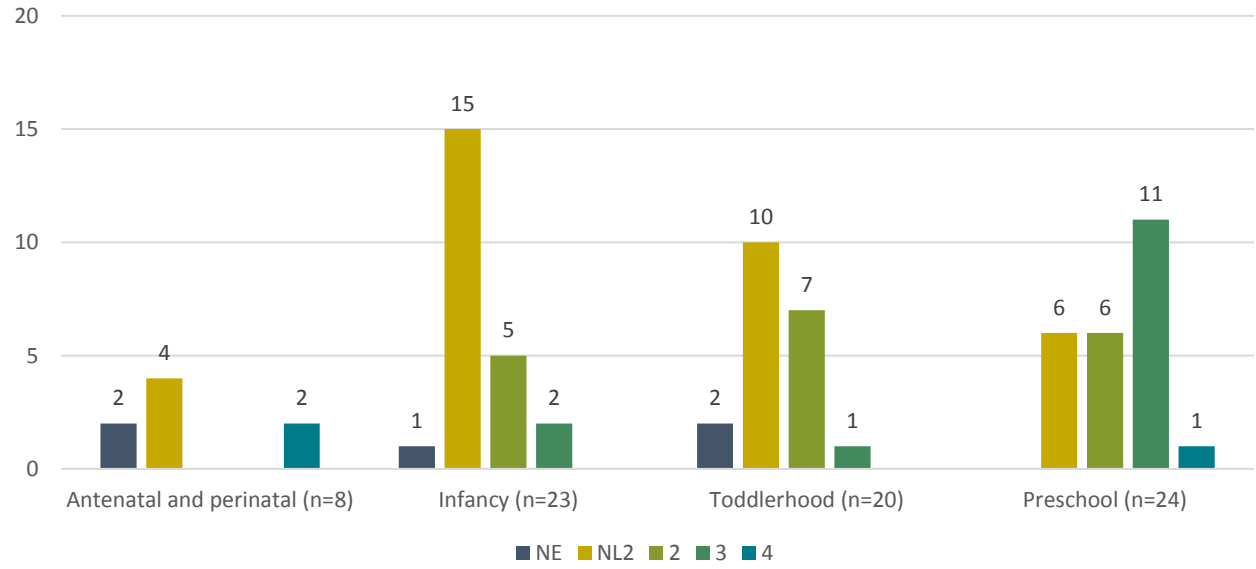


- Promotion+ and Group programmes tend to be less resource-intensive, with 33 (97%) programmes of low or medium-low cost.
- Home Visiting and Individual programmes tend to be more resource-intensive. They are also the only examples of highly resource-intensive programmes.

Children's age

Figure 20 reports the distribution of evidence within age group, demonstrating that a greater proportion of preschool interventions (12 or 50%) could be described as evidence-based in comparison to those first available in toddlerhood (1 or 5%), infancy (2 or 9%) and the antenatal/perinatal period (2 or 25%).

Figure 20: Distribution of evidence within age categories (n=75)



Of course, the greater proportion of evidence-based programmes within the higher age ranges may reflect the difficulty of measuring very early development. The difference in the proportion of evidence-based programmes in the preschool range may also reflect the fact that more of these programmes are behavioural interventions, as Figure 11 (distribution of age within outcome domain) and Figure 15 (distribution of evidence

within outcome domain) make clear. The distribution of evidence within each of these domains will be described in greater depth in Chapters 4, 5 and 6.

Summary of strength of evidence findings

The relationship between strength of evidence, delivery model, level of need, target age and each outcome domain will be explored in greater depth in the chapters that follow. However, a number of common themes are worth noting here. First, just under a quarter (17 or 23%) of the programmes could be considered evidence-based with Level 3 or 4 evidence. Specifically, only three interventions had Level 4 evidence from two or more rigorously conducted impact evaluations (RCTs in this case). An additional 14 had Level 3 evidence from at least one rigorously conducted evaluation (an RCT) confirming statistically significant improvements in child outcomes. Another quarter (18 or 24%) had preliminary evidence of improving a child outcome through a comparison group study or pre/post pilot. Five (7%) had evidence from a rigorously conducted impact evaluation observing no effect on any social, emotional or cognitive child outcome, despite having measured one.

A far greater proportion of programmes (35, representing 46%) did not yet have evidence that met the Level 2 threshold. This finding is not surprising, given the fact that programme development and evaluation is relatively new to the field. It is nevertheless worth noting that there are evidence-based models to choose from within each outcome domain, classification of need, delivery model and age group.

Summary of the aggregate cost rating findings

The review identified programmes at all levels of indicative unit cost, ranging from under £100 to over £2,000 per child. However, the majority of programmes were relatively low cost, with 27% receiving the lowest cost rating and 35% receiving the second lowest cost rating.

While evidence-based programmes tended to be more expensive, this expense was primarily driven by two home visiting interventions that targeted the attachment relationship for a period of a year or longer. Otherwise, there were a number of relatively low-cost, yet evidence-based options that were available for families at the Universal, Targeted-Selective and Targeted-Indicated levels. Table 2 lists these programmes in terms of their classification, target age-range, delivery model and resource costs.

As mentioned previously, the cost information presented here is not intended to inform judgements about programme cost benefits. An understanding of potential cost benefits is only possible with more specific information about programme impacts, which was outside the scope of this review. However, it is fair to say that there are a number of relatively low-cost programmes with good short-term evidence of improving child outcomes, as well as a few with good long-term evidence. These programmes will be discussed in further detail in the chapters that follow.

Scale of impact

As a What Works Centre, EIF's core responsibilities are to assess early intervention programmes in terms of their strength of evidence, relative costs and scale of impact. In this review we have focused on assessing the quality of the evidence for the programmes identified and have developed a new, efficient way of estimating

resource costs. By assessing the quality of the evidence we have been able to identify a set of programmes that are available to commissioners in English councils and have robust evidence of impact on child outcomes. We will build on this in further work to be published later this year in which we will assess the overall scale of impact of these programmes and consider what that means for cost effectiveness and the opportunity to derive cashable savings from reduced demand for late intervention.

In this section, we present some very preliminary findings about the scale of impact from programmes analysed in this review. These findings are intended to indicate some of the issues that need to be addressed in order to estimate the overall cost effectiveness of this form of early intervention, to clarify some of the further steps required and explain why further work is needed. All findings presented here are descriptive, preliminary and subject to further analysis. They do not lead to headline findings but are intended to amplify issues.

We restrict attention to those programmes termed 'evidence-based' – achieving Level 3 or 4 on the EIF standards of evidence – as these programmes have credible evidence of showing positive impacts on outcomes. While programmes with less rigorous evaluations may also have measured changes in outcomes, such estimates do not have the requisite internal validity to be used in the next stage of analysis. As shown earlier in this chapter, this review has identified 17 programmes achieving Level 3 or 4 for strength of evidence. These programmes are supported by a range of evaluation studies in different contexts and using very different measures of outcomes at different ages and at different periods after intervention. For the analysis presented here we have drawn on effects data for 15 programmes for which effect sizes have been reported in evaluation studies and for which the primary outcome was very clear and was the main focus of the evaluation. Therefore the effect sizes described here are a subset of the effects of this set of programmes which are a subset of programmes overall.

An important complication is that early intervention programmes considered in the round will involve a multiplicity of outcomes and measures. This can make comparison across programmes extremely difficult as there is no simple, standard, common currency that provides a comparable metric for all programmes. Literacy programmes might have effects that could all be translated into a common metric of months of additional progress in reading. However, there is no metric that allows the effect of an attachment-based programme to be compared to the effect of a behaviour or cognitive development programme. Table 5 shows that even within each outcome category, there is wide variation in the specific measures used, which may create difficulties for the combination and comparison of impact coefficients. The table shows the most common measures used, and these only account for a fraction of the total.

TABLE 5: COMMON OUTCOME MEASURES

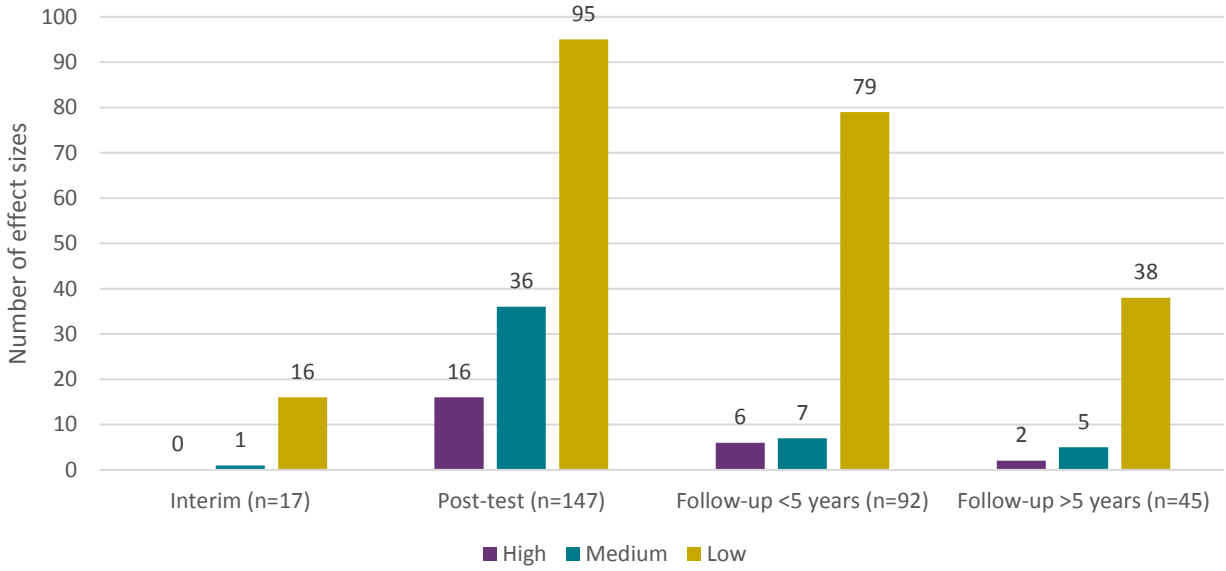
Attachment	Behaviour	Cognitive
• Child Behavior Checklist • Parenting Stress Index • Center for Epidemiological Studies Depression Scale • Revised Conflicts Tactics Scale • Coparenting Relationship Scale	• Eyberg Child Behavior Inventory • Parenting Scale • Parent Problem Checklist • Parent Daily Report • Strengths and Difficulties Questionnaire • Parenting Sense of Competence Scale	• HOME Inventory • Kaufman ABC • Bayley Scales of Infant Development • Parenting Practices Interview

Another key limitation that has emerged during this analysis is that a significant proportion of evaluation studies – even those which achieve Level 3 or 4 on the EIF standards of evidence – have not reported a

measure of effect size. In fact, effect sizes have only been identified in 45% of cases; in the other cases, only a measure of statistical significance (typically a p-value or test statistic) is reported.

Figure 21 shows, for cases in which effect sizes have been measured, when that took place in relation to the timing of the intervention. This shows that measurement at the end of an intervention (post-test) is the most common type of analysis; longer-term follow-up analysis is rare. Also, when analysis is carried out at a longer-term follow-up, and effect sizes are calculated, such effects are more likely to be modest.[30]

Figure 21: Number of effect sizes measured, by point in time relative to intervention (n =301)



This finding is confirmed by Figure 22, which plots the actual effect sizes separately for each outcome domain and for each of the post-intervention time points: post-test, follow-up less than five years after the intervention and follow-up more than five years after the intervention. We have included here a separate data point for each statistically significant effect so each evaluation study appears multiple times on the graph. The outcome domain in this analysis is coded according to the domain of the effect; for example, if an attachment programme measures child behaviour, the resulting estimate of impact is coded here on the basis of the programme primary outcome of attachment security.

The graph shows that short-term effects on behaviour outcomes tend to be larger in this sample, but in follow-up studies such effects are both rare and more modest – especially beyond five years from an intervention. Short-term effects on attachment are lower, but these effects do not drop much in longer-term follow-ups (although our analysis did not identify any effect sizes on measures of attachment beyond five years after the intervention). The effect on a cognitive outcome in this sample is modest in the short-term, but remained at a similar magnitude in longer-term follow-up. These are interesting but very preliminary findings that we will test further in subsequent analysis.

[30] In this analysis, 0.5 is the threshold between a low and a medium effect size, while 0.8 is the threshold between a medium and a high one.

Figure 22: Distribution of effect size by outcome domain and point at which effects are measured (n=72)

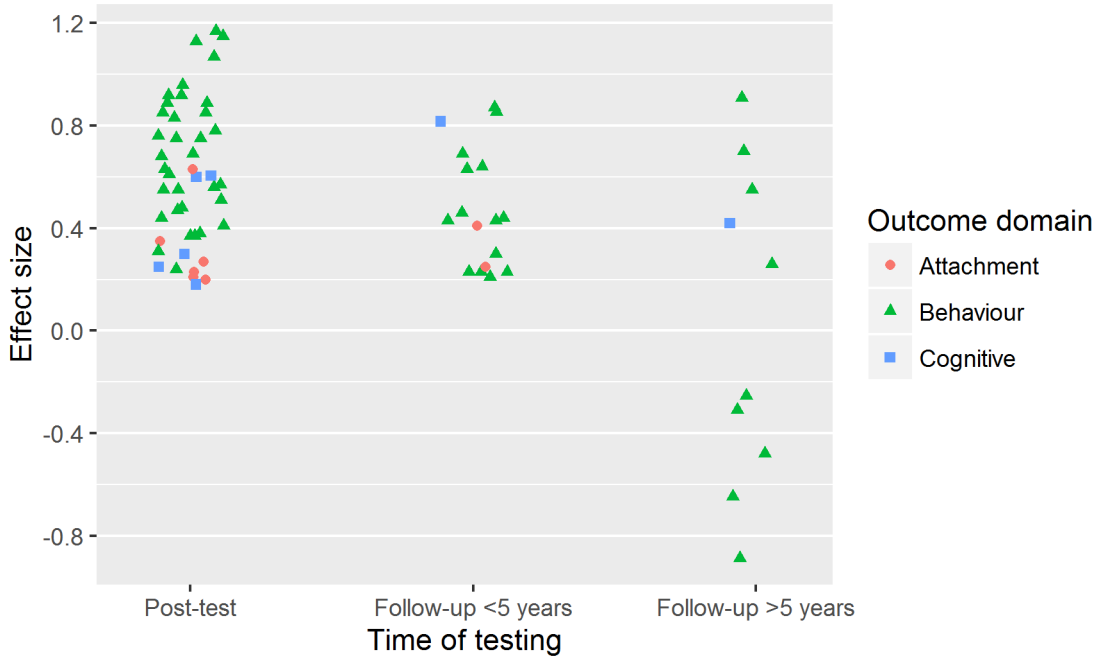


Figure 23 shows the number of measured effect sizes by outcome category.

Figure 23: Number of effect sizes, by outcome domain (n=667)

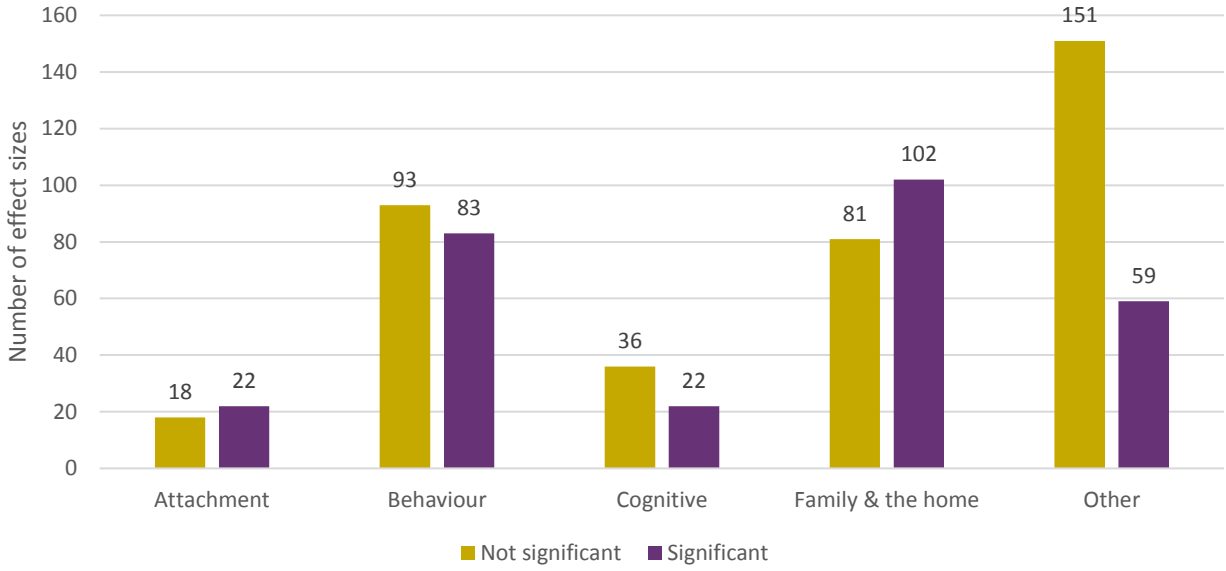


Figure 23 demonstrates the range of types of outcome measured in these evaluation studies. The majority of effects do not relate to child-level outcomes. Studies measure many other aspects such as parental wellbeing, parenting behaviour and family functioning.

Overall, we emphasise that the analysis of the scale of impact of these programmes is very preliminary. We will publish richer and more detailed analysis in a follow-up publication later this year but have indicated here some of the challenges of developing rigorous and comparable estimates of impact. The data that has been gathered so far has uncovered a number of limitations, particularly in relation to the diversity of outcome measures, the prevalence of effects on non-child outcomes, and the point at which effects are measured.

Summary of key messages

This chapter presented the aggregate findings from the strength of evidence and cost assessments of the 75 programmes identified in this review. It observed that less than a quarter (23%) could be considered evidence-based in terms of having evidence from at least one rigorously conducted study observing statistically significant benefits for children. An additional five programmes were assessed as demonstrating no benefits for child development in robust evaluation.

These findings are consistent with other studies suggesting that relatively few programmes for families with young children have evidence of effectiveness. However, we found a fair degree of choice of effective programmes. Specifically, this exercise identified effective options for families at all levels of need within the outcome domains of attachment, behavioural self-regulation and early language and cognitive development.

This assessment also observed that there was a greater choice of evidence-based Targeted-Selective or Targeted-Indicated programmes than there were Universal evidence-based interventions. In fact, only one Universal programme was assessed as having Level 3 or higher evidence of being effective.

For 60 of the 75 programmes analysed in this review, a rating of relative unit cost has been produced. Programmes that are likely to have a higher unit cost tend to involve practitioners that are more highly qualified and have undergone more extensive training. Higher-cost programmes generally have higher training fees, and are more likely to require a licence, internal supervision and periodic booster training for practitioners. Finally, higher-cost programmes tend to involve a more intense 'dose'.

The cost assessment additionally revealed that the majority (61%) of programmes identified in this review are low to low medium cost. While evidence-based programmes tended to be higher cost, there were nevertheless evidence-based programmes available at low or low-medium cost. Eight of these lower-cost programmes were available at the Targeted-Selective and Targeted-Indicated levels and all of them targeted children's behaviour. The details of all of these programmes will be discussed in greater depth in the chapters that follow.

Chapter 4

Interventions that support the attachment relationship

The first five years of life represent a time when children first learn important tasks that lay the foundation for future learning. Children master these tasks primarily through their interactions with their parents and environment within the context of three inter-related domains: the attachment relationship, early behaviour and self-regulatory processes and emerging cognitive and linguistic skills.[31] The majority of programmes identified in this review support child outcomes in all three of these domains, although they differ in their primary emphasis. This chapter describes findings involving the strength of evidence underpinning 28 interventions that primarily aim to support children's attachment security. The ability to form a secure attachment relationship with the primary caregiver is thought to provide the context in which children learn to trust themselves and interact confidently with others.

This chapter describes attachment-based interventions first in terms of their theoretical frameworks and the observational evidence underpinning them. This discussion includes a summary of the programmes' primary outcomes and the methods used to measure them. We then present the aggregate findings involving the evidence underpinning the 28 attachment-based programmes. Key points about their evidence and costs are further illustrated through case examples involving five programmes with one robust (Level 3) evaluation. The chapter concludes with a summary of the findings and their implications for the commissioning and delivery of attachment-based programmes.

Attachment theory

Forming a secure attachment relationship with the caregiver is a key developmental task of the child's first year. According to psychologist John Bowlby's original theories, the attachment process begins at birth, with reflexive infant behaviours (e.g. crying, smiling and sucking) that automatically elicit care giving responses from the parents.[32] Parents who respond sensitively and predictably to these behaviours create a context in which infants form positive expectations about themselves and others.[33] It is theorised that these positive expectations then develop into mental representations (also referred to as 'internal working models') that children carry with them as they gain independence from their parents.[34] Figure 24 illustrates how these processes work together to influence young children's development.

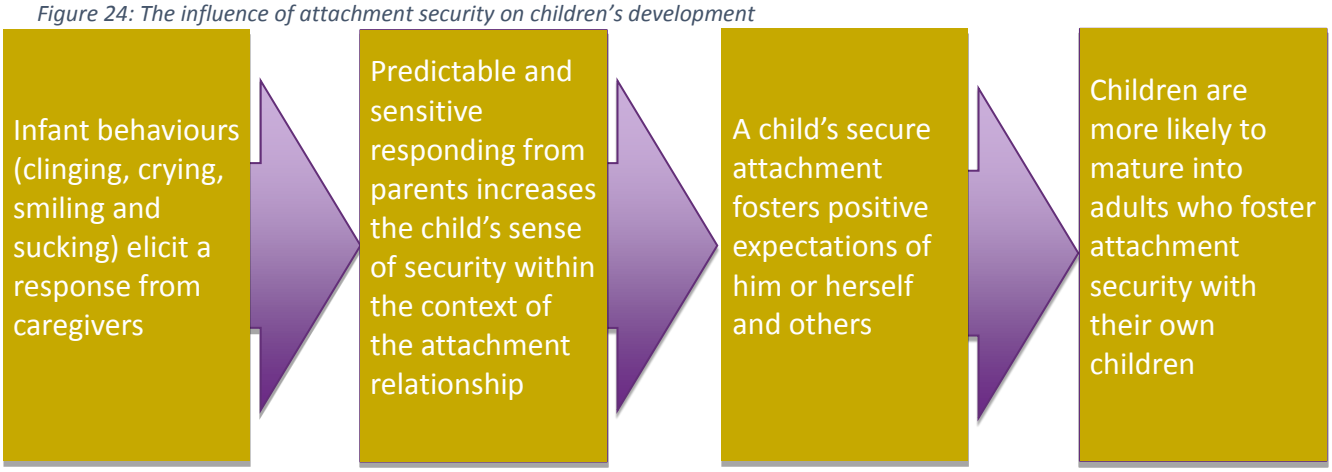
[31] Piaget, J. (2013). *The Construction of Reality in the Child* (Vol. 82). Abingdon: Routledge.

[32] Bowlby, J. (1969). *Attachment and Loss*. New York, NY: Basic Books.

[33] Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of Attachment: A Psychological Study of the Strange Situation.* Hillsdale, NJ: Lawrence Erlbaum Associates.

[34] Bowlby, J. (1988). A Secure Base: Parent-Child Attachment and Healthy Human Development. New York, NY: Basic Books.

Figure 24: The influence of attachment security on children's development



Contrary to popular belief, infants do not become attached to their parents immediately after birth as other animal species do.[35, 36] Nor are attachment processes specifically initiated or facilitated by touch or smell. [37] Rather, the attachment relationship develops gradually over a period of months (most typically the first six months) through reciprocal interactions between the parent and child. Parenting behaviours thought to support the attachment relationship include their ability to accurately interpret their child's bids for attention and appropriately match or 'attune' their responses in a way that does not frighten, over- or under-stimulate their child.[38,39,40,41] It is thought that these interactions form the basis of the child's first internal working models and also become the context within which important self-regulatory processes are established.[42,43]

The Strange Situation

Developmental scientists believe that all children form an attachment relationship with their adult caregivers, although their attachment 'security' may vary. Attachment security is often assessed through observations of the mother or father and child interacting together during the 'Strange Situation'. This experimental paradigm was developed by Mary Ainsworth and her colleagues to simulate day-to-day situations that gently stress the child and activate attachment-related behaviours.[44]

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[35] Lamb, M. E., & Tamis-Lemonda, C. S. (2004). The role of the father: An introduction. In M. E. Lamb (Ed.), *The Role of the Father in Child Development* (4th ed., pp. 1–31). Hoboken, NJ: Wiley.

[36] Rutter, M. (1995). Clinical implications of attachment concepts: Retrospect and prospect. *Journal of Child Psychology and Psychiatry, 36*, 549–571.

[37] Lamb, M. E. (1983). Annotation: Early mother-neonate contact and the mother-child relationship. *Journal of Child Psychology and Psychiatry, 24,* 487–494.

[38] De Wolff, M. S., & van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development, 68*, 571–591.

[39] Slade, A., Grienenberger, J., Bernback, E., Levy, D., & Locker, A. (2005). Maternal reflective functioning, attachment, and the transmission gap: A preliminary study. *Attachment and Human Development, 7*, 283–298.

[40] Meins, E., Fernyhough, C., Fradley, E., & Tuckey, M. (2001). Rethinking maternal sensitivity: Mothers' comments on infants' mental processes predict security of attachment at 12 months. *Journal of Child Psychology and Psychiatry, 42*, 637–648.

[41] Beebe, B., Jaffe, J., Markese, S., Buck, K., Chen, H., Cohen, P., & Feldstein, S. (2010). The origins of 12-month attachment: A microanalysis of 4-month mother–infant interaction. *Attachment and Human Development*, *12*, 3–141.

[42] Beebe, B., Jaffe, J., Markese, S., Buck, K., Chen, H., Cohen, P., Bahrick, L., Andrews, H., & Feldstein, S. (2010). The origins of 12-month attachment: A microanalysis of 4-month mother–infant interaction. *Attachment and Human Development*, *12*, 1–135.

[43] Bernier, A., Calkins, S. D., & Bell, M. A. (2016). Longitudinal associations between the quality of mother–infant interactions and brain development across infancy. *Child Development*, early release.

[44] Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of Attachment: A Psychological Study of the Strange Situation*. Hillsdale, NJ: Lawrence Erlbaum and Associates.

In the Strange Situation, the parent and his or her infant (typically between the ages of 10 and 24 months) are introduced to a laboratory room filled with toys and are instructed to play with them in the presence of a 'stranger' (i.e. a researcher who is not familiar to the child). The stranger, parent and child then play together for a short period of time until the parent is asked to leave for several minutes. After the parent returns, there is a second brief play period, followed by a second separation, when both the stranger and parent leave. The toddler is then left completely alone for a very short period (typically three minutes or less), after which the parent returns to comfort his or her child.

Four patterns of parent–infant interaction occurring during the separation and reunion episodes are thought to be indicative of the child's attachment security:[45,46,47]

- **Securely attached or a 'B' attachment:** (involving between 60 and 70% of all children) the infant becomes distressed when the parent leaves the room, but is easily comforted when he or she returns.
- **Avoidant-insecure or an 'A' attachment:** (approximately 20%) the infant appears less stressed when the parent leaves and avoids his or her parent upon reunion.
- **Ambivalent/resistant-insecure or a 'C' attachment:** (approximately 10%) the infant becomes extremely stressed when his or her parent leaves the room, but is surprisingly angry when he or she returns. The infant is also difficult to soothe when the parent returns.
- **Disorganised or a 'D' attachment:** Approximately 15% of toddlers (depending on the population) behave as if they are confused or disoriented when the parent leaves and then act frightened (by rocking or freezing) when the parent returns. Parent/child interaction during the free-play and reunion episodes is also characterised by 'fr-behaviours', where either the parent or child behave in a way that is frightening or frightened.[48]

Fathers' contribution to children's attachment security

Infants form an attachment relationship with the caregivers with whom they have the most frequent contact. For the majority of children, this is their biological mother and father, although children can form a primary attachment with any adult they frequently see.[49] Studies have found that fathers are as capable as mothers of responding sensitively to their children's needs. The majority of children will have established an attachment relationship with their father by the time they are eight months old if their father is living with them.[50]

[45] Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of Attachment: A Psychological Study of the Strange Situation*. Hillsdale, NJ: Lawrence Erlbaum and Associates.

[46] Van Ijzendoorn, M. H., & Kroonenberg, P. M. (1988). Cross-cultural patterns of attachment: A meta-analysis of the strange situation. *Child Development, 59,* 147–156.

[47] Van IJzendoorn, M. H., Schuengel, C., & Bakermans-Kranenburg, M. J. (1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology, 11*, 225–249.

[48] van der Voort, A., Juffer, F., & Bakermans-Kranenburg, M. J. (2014). Sensitive parenting is the foundation for secure attachment relationships and positive social-emotional development of children. *Journal of Children's Services, 9*, 165–176.

[49] Kotelchuck, M. (1976). The infant's relationship to the father: Experimental evidence. In M. E. Lamb (Ed.) *The role of the father in child development* (pp. 329–344). New York, NY: Wiley.

[50] Lamb, M. E., & Lewis, C. (2010). The development and significance of father-child relationships in two parent families. In M. E. Lamb (Ed.), *The role of the father in child development* (5th ed., pp. 94–153). Hoboken, NJ: Wiley.

Studies suggest that the quality of the child's attachment relationship with the father typically parallels the quality of the relationship with the mother.[51] In this regard, if the child has a secure attachment with the mother, he or she is more likely to establish a secure attachment with the father. However, studies have also found that fathers can and do establish a secure attachment with their infant in instances where the mother has not been able to do so. In these circumstances, sensitive fathering behaviours may compensate for and buffer children from attachment problems with the mother.[52,53,54]

Fathers additionally support their children's attachment security through the quality of the *co-parenting* relationship they have with their child's mother.[55] The co-parenting relationship is formed between both parents as they negotiate their roles and responsibilities towards each other and their child during the transition to parenthood.[56] The co-parenting relationship is independent of the romantic couple relationship, although satisfaction in one domain is associated with satisfaction in the other.[57] Studies increasingly suggest that the quality of the co-parenting relationship is a better predictor of child outcomes than is the quality of the couple relationship.[58,59] In fact, parents do not even need to be together in a couple relationship to work successfully as co-parents.

Continuity and change in the attachment relationship

The majority of attachment research is longitudinal in nature, investigating the extent to which patterns of attachment observed in infancy predict attachment-related behaviours at later points in the child's development. These studies have found that securely attached children are more likely to be self-confident, motivated and pro-social by the time they reach early adolescence.[60] Studies also suggest that attachment security is intergenerational, with securely attached individuals being more likely to establish a secure attachment with their own children when they become parents.[61] In contrast, insecurely attached children are at greater risk of experiencing a variety of emotional and behavioural problems as they develop. This is particularly true of children identified as having a disorganised or 'D' attachment, which is consistently associated with parental mental health problems, including substance misuse and child maltreatment during

[51] Kochanska, G., & Kim, S. (2013). Early attachment organization with both parents and future behaver problems: From infancy to middle childhood. *Child Development, 84*, 283–296.

[52] Ryan, R. M., Martin, A., & Brooks-Gunn, J. (2006). Is one good parent good enough? Patterns of mother and father parenting and child cognitive outcomes at 24 and 36 months. *Parenting: Science and Practice, 6*, 211–228.

[53] Kochanska, G., & Kim, S. (2013). Early attachment organization with both parents and future behaver problems: From infancy to middle childhood. *Child Development, 84*, 283–296.

[54] Ramchandani, P. G., Domoney, J., Sethna, V., Psychogiou, L., Vlachos, H., & Murray, L. (2013). Do early father-infant interactions predict the onset of externalising behaviours in young children? Findings from a longitudinal cohort study. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 54*, 56–64.

[55] Feinberg, M. E. (2003). The internal structure and ecological context of coparenting: A framework for research and intervention. *Parenting Science and Practice, 3,* 95–131.

[56] Belsky, J., Crnic, K., & Gable, S. (1995). The determinants of coparenting in families with toddler boys: Spousal differences and daily hassles. *Child Development, 66*, 629–642.

[57] Carlson, M. J., Pilkauskas, N. V., McLanahan, S. S., & Brooks-Gunn, J. (2010). Couples as partners and parents over children's early years. *Journal of Marriage and Family, 73*, 317–334.

[58] McHale, J. P., & Rasmussen, J. L. (1998). Coparental and family group-level dynamics during infancy: Early family precursors of child and family functioning during preschool. *Development and Psychopathology, 10*, 39–59.

[59] Schoppe-Sullivan, S. J., Weldon, A. H., Cook, J. C., Davis, E. F., & Buckley, C. K. (2009). Coparenting behavior moderates longitudinal relations between effortful control and preschool children's externalizing behaviour. *Journal of Child Psychology and Psychiatry, 50*, 698–706.

[60] Sroufe, L. A., Egeland, B., Carlson, E. A., & Collins, W. A. (2005). The Development of the Person: The Minnesota Study of Risk and Adaptation from Birth to Adulthood. New York: Guilford.

[61] Solomon, J., & George, C. (2006). Intergenerational transmission of dysregulated maternal caregiving: Mothers describe their upbringing and child rearing. In O. Mayseless (Ed.), *Parenting Representations: Theory, Research, and Clinical Implications* (pp. 265–295). Cambridge, UK: Cambridge University Press.

infancy.[62] Infants identified as having a disorganised or 'D' attachment are thought to be at particular risk of later psychological and behavioural difficulties when they become older.[63,64] Specifically, longitudinal studies have found that disorganised infants are more likely to behave in a way that is aggressive or controlling in middle childhood and be diagnosed with a mental health problem in early adulthood.[65,66,67]

However, it is important to recognise that the strength of these relationships, while significant, is often relatively weak (e.g. r = .18) and influenced by a variety of external factors, including the stability of the child's circumstances over time.[68] In addition, the extent to which an avoidant or anxious pattern of attachment predicts any specific child difficulties remains debated.[69,70] From this perspective, an insecure attachment is not considered to be a psychological disorder, but a *risk* for future problems that is also malleable to change.[71,72] Findings from two large-scale longitudinal studies suggest that insecurely attached children can and do become secure if their family circumstances improve over time. Conversely, securely attached children frequently become insecure if their life circumstances become worse.[73,74]

It is also important to note that maternal behaviours in infancy are often better predictors of later child outcomes than are children's own early behaviours. For example, the above longitudinal studies also found that early maternal sensitivity in the early years is one of the best predictors of positive adult outcomes later in life. Specifically, sensitive care giving in infancy is significantly associated with children's academic achievement and relationship satisfaction in adulthood, when other early child behaviours, including attachment security, are not.[75,76]

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[62] Moss, E., Cyr, C., Bureau, J. F., Tarabulsy, G. A., & Dubois-Comtois, D. (2005). Stability of attachment during the preschool period. *Developmental Psychology, 41,* 773–783.

[63] Lyons-Ruth, K., & Jacobvitz, D. (1999). Attachment and disorganisation: Unresolved loss, relational violence, and lapses in behavioural and attentional strategies. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of Attachment: Theory, Research and Clinical Applications* (pp. 520–554). New York, NY: Guildford Press.

[64] Van IJzendoorn, M. H., Schuengel, C., & Bakermans-Kranenburg, M. J. (1999). Disorganised attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology, 11*, 225–249.

[65] Fearon, R. P., Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Lapsley, A. M., & Roisman, G. I. (2010). The significance of insecure attachment and disorganization in the development of children's externalizing behaviour: A meta-analytic study. *Child Development, 81*, 435–456.

[66] O'Connor, E., Bureau, J. F., McCartney, K., & Lyons-Ruth, K. (2011). Risks and outcomes associated with disorganized/controlling patterns of attachment at age three in the NICHD study of early child care and youth development. *Journal of Infant Mental Health, 32*, 450–472.

[67] Lyons-Ruth, K., Bureau, J. F., Homes, B., Easterbrooks, A., & Hall Brooks, N. (2012). Borderline symptoms and suicidality/self-injury in late adolescence: Prospectively observed relationship correlates in infancy and childhood. *Psychiatry Research, 206*, 273–281.

[68] Sroufe, L. A., Coffino, B., & Carlson, E. (2010). Conceptualizing the role of early experience. Lessons from the Minnesota longitudinal study. *Developmental Review, 30*, 36–51.

[69] Kobak, R., Cassidy, J., Lyons-Ruth, K., & Ziv, Y. (2006). Attachment and developmental psychopathology. In D. Cicchetti & D. J. Cohen (Eds.) *Developmental Psychopathology* (2nd ed., pp. 333–369). Hoboken, NJ: John Wiley and Sons.

[70] Fearon, R. P., Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Lapsley, A. M., & Roisman, G. I. (2010). The significance of insecure attachment and disorganization in the development of children's externalizing behaviour: A meta-analytic study. *Child Development, 81*, 435–456.

[71] Greenberg, M. T. (1999). Attachment and psychopathology in childhood. In J. Cassidy & P. R. Shaver (Eds.) *Handbook of Attachment: Theory, Research and Clinical Applications* (pp. 469–496). New York, NY: Guildford Press.

[72] Rutter, M. (1995). Clinical implications of attachment concepts: Retrospect and prospect. *Journal of Child Psychology and Psychiatry, 36*, 549–571.

[73] Sroufe, L. A., Egeland, B., Carlson, E. A., & Collins, W. A. (2005). The Development of the Person: The Minnesota Study of Risk and Adaptation from Birth to Adulthood. New York: Guilford.

[74] NICHD Early Care Research Network (2006). Infant-mother attachment classification: Risk and protection in relation to changing maternal caregiving quality. *Developmental Psychology, 42*, 38–58.

[75] Sroufe, L. A., Coffino, B., & Carlson, E. (2010). Conceptualizing the role of early experience. Lessons from the Minnesota longitudinal study. *Developmental Review, 30*, 36–51.

[76] Raby, K. L., Fraley, C. R., Roisman, G. I., & Simpson, J. A. (2015). The enduring predictive significance of early maternal sensitivity: Social and academic competence through age 32 years. *Child Development, 86*, 695–708.

Although the reasons for this are debated, it is possible that sensitive parenting behaviours during infancy organise early developmental processes in a way that facilitates adaptation and coping as children mature.[77,78] Hence, it may be that early parenting behaviours uniquely contribute to adult outcomes in a way that is enduring and independent from anything occurring between the parent and child in the years that follow. Alternatively, it may be that the association between early maternal sensitivity and later adult functioning is, in fact, a by-product of continuity in sensitive care giving. From this perspective, parents who are sensitive to their children's needs during infancy are also more likely to be more sensitive to their children's needs when they grow older. Thus, it may be that sensitive parenting behaviours occurring in later childhood are, in fact, the primary predictors of the positive outcomes observed in adulthood.[79]

Studies are nevertheless consistent in suggesting that sensitive parenting behaviours are highly associated with the parents' own wellbeing and the quality of the family's circumstances.[80,81] Factors that predict maternal sensitivity include the family's level of deprivation, the parents' mental and physical health, the quality of the family's support networks and the quality of the couple relationship. For example, a meta-analytic study conducted by van Ijzendoorn and colleagues found the rate of disorganised attachment in middle class populations to be approximately 15%, in comparison to 19% amongst depressed mothers, 23% amongst teen mothers, 25 to 35% in low-income samples, 43% amongst mothers with alcohol and substance misuse problems and 48% or higher in samples where child maltreatment has been suspected.[82]

Child factors also elevate the risk of an insecure attachment. For example, children with a neurological disability are at greater risk of an insecure attachment, as are infants identified as difficult to sooth. In fact, a growing body of evidence suggests that attachment security may be 'differentially susceptible', meaning that for some children it may be a heritable predisposition, but for others, more malleable to environmental influences.[83,84]

Collectively, these findings suggest that parent and child behaviours do not perfectly predict children's attachment security and later life outcomes. Rather, children's attachment security is likely best predicted by the interplay of risk and protective factors present in the child's environment at any given point in time.[85,86]

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[77] Fraley, C. R., Roisman, G. I., & Haltigan, J. D. (2013). The legacy of early experiences in development: Formalizing alternative models of how early experiences are carried forward over time. *Developmental Psychology, 49*, 109–126.

[78] Raby, K. L., Fraley, C. R., Roisman, G. I., & Simpson, J. A. (2015). The enduring predictive significance of early maternal sensitivity: Social and academic competence through age 32 years. *Child Development, 86*, 695–708.

[79] NICHD Early Care Research Network (2006). Infant-mother attachment classification: Risk and protection in relation to changing maternal caregiving quality. *Developmental Psychology, 42*, 38–58.

[80] Belsky, J., & Fearon, R. M. P. (2002). Early attachment security, subsequent maternal sensitivity and later child development: Does continuity in development depend upon continuity of caregiving? *Attachment and Human Development, 4*, 361–387.

[81] Raby, K. L., Fraley, C. R., Roisman, G. I., & Simpson, J. A. (2015). The enduring predictive significance of early maternal sensitivity: Social and academic competence through age 32 years. *Child Development, 86*, 695–708.

[82] Van IJzendoorn, M. H., Schuengel, C., & Bakermans-Kranenburg, M. J. (1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants and sequelae. *Development and Psychopathology, 11*, 225–249.

[83] Belsky, J. (1999). Interactional and contextual determinants of attachment security. In J. Cassidy (Ed.) *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 249–264). New York, NY: Guilford Press.

[84] Belsky, J., & Pluess, M. (2009). Beyond diathesis stress: Differential susceptibility to environmental influences. *Psychological Bulletin, 135*, 885–908.

[85]Belsky, J. (1999). Interactional and contextual determinants of attachment security. In J. Cassidy (Ed.), *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 249–264). New York, NY: Guilford Press.

[86] De Wolff, M. S., & van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development, 68*, 571–591.

Attachment security and early intervention

As mentioned previously, the majority of parents are able to foster a secure attachment relationship with their child without any additional support from external services. However, there are circumstances that make this process more difficult. From this perspective, interventions targeting attachment security are unlikely to be necessary for all families, but potentially highly beneficial for families where there is an identified risk. This is particularly true if the risk has been linked to a disorganised attachment. In these instances, Targeted-Selective or Targeted-Indicated interventions directed at families on the basis of pre-identified risks have the greatest likelihood of improving parent and child functioning and preventing future difficulties.

Systematic reviews have found that attachment interventions tend to fall into one of two categories: those which focus primarily on strategies for improving parental sensitivity and those that also aim to change parents' (in most cases the mothers') internal representations of their child[87,88,89] Interventions that primarily focus on parental sensitivity are informed by findings from the meta-analysis conducted by Bakermans-Kranenburg et al. (2003), which found that short-term interventions that directly coached sensitive parenting behaviours were more successful than less focused, longer-term approaches.[90] A key feature of these interventions is the use of video-tape feedback to help parents reflect on their behaviour and identify responses that could be improved.

Interventions that aim to alter internal representations are informed by research suggesting that attachment security is more strongly associated with a parent's internal representations of their child than it is with their overall sensitivity.[91] Such interventions are based on the 'transmission model' of attachment, which assumes that parents' ability to understand and respond appropriately to their child's behaviour is influenced by their previous attachment history and their current internal working models. Specifically, the transmission model assumes that painful childhood memories can cause parents to misinterpret natural infant behaviours as intentionally disruptive or rejecting.[92,93,94] For example, a mother might interpret her child's crying as a personal rejection, rather than a sign of hunger or physical discomfort. A key aim of transmission-based interventions is to combine sensitivity coaching with psychotherapy to help parents alter negative representations of their child.

[87] Berlin, L. J. (2005). Interventions to enhance early attachments: The state of the field today. In L. Berlin, Y. Ziv, L. Amaya-Jackson, & M. Greenberg (Eds.), *Enhancing Early Attachment: Theory, Research, Intervention and Policy* (pp. 3–33). New York: NY: Guildford Press.

[88] Barlow, J., Bennett, C., Midgley, N., Larkin, S. K., & Wei, Y. (2015). Parent-infant psychotherapy for improving parent and infant well-being. *The Cochrane Library, Issue 1*.

[89] Barlow, Jane, Bennett, Cathy, Midgley, Nick, Larkin, S. K., & Wei, Yen. (2015). Parent-infant psychotherapy for improving parental and infant mental health: A systematic review. *Cochrane Database of Systematic Reviews, 11*, 1–30.

[90] Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., & Juffer, F. (2003). Less is more: Meta-analyses of sensitivity and attachment interventions in early childhood. *Psychological Bulletin, 129*, 195–215.

[91] Van IJzendoorn, M. H., Juffer, F., & Duyvesteyn, M. G. C. (1995). Breaking the intergenerational cycle of insecure attachment: A review of the effects of attachment-based interventions on maternal sensitivity and infant security. *Journal of Child Psychology and Psychiatry, 36*, 225–248.

[92] Fraiberg, S., Adelson, E., & Shapiro, V. (1980). Ghosts in the nursery: A psychoanalytic approach to the problem of impaired infant-mother relationships. *Journal of the American Academy of Child Psychiatry, 14*, 387–421.

[93] Fonagy, P., Steele, M., Steele, H., Moran, G. S., & Higgitt, A. C. (1991). The capacity for understanding mental states – the reflective self in parent and child and its significance for security of attachment. *Infant Mental Health Journal, 12*, 201–218.

[94] Fonagy, P., Steele, M., Moran, G., Steele, H., & Higgitt, A. (1993). Measuring the ghost in the nursery: An empirical study of the relation between parents' mental representation of childhood experiences and their infants' security of attachment. *Journal of the American Psycho-analytic Association, 41*, 957–989.

How is the impact of attachment programmes measured?

The primary goals of attachment–based interventions are to increase children's attachment security and improve parental sensitivity. Table 6 lists some of the more commonly used methods for assessing children's attachment security and parental sensitivity.

TABLE 6: MEASURES COMMONLY USED TO ASSESS CHILDREN'S ATTACHMENT SECURITY AND ATTACHMENT RELATED OUTCOMES

Child attachment security	
The Strange Situation	The Strange Situation is perhaps the most common method for measuring attachment security. An observational paradigm in which the parent(s) and child are video-taped in several situations: the child and parent(s) alone; the child and parent(s) with a stranger; the child and stranger alone; a 'reunion' episode between the parent and child. The child's behaviour is assessed as secure (B), or within three categories of insecure: avoidant (A); anxious (C); or disorganised (D).
Attachment Q-set	The Q-set consists of nearly 100 items intended to cover a variety of attachment-related behaviours. Researchers observe the child's behaviour and sort the behaviours based on what they see.
Parental measures (attachment related)	
Crittenden CARE-Index	The CARE-Index assesses mother–infant interaction from birth to about two years of age based on a short, video-taped play interaction of 3–5 minutes. Trained coders assess mothers on three scales: sensitivity, control and unresponsiveness. There are also four scales for infants: cooperativeness, compulsivity, difficultness and passivity.
Adult Attachment Interview	The Adult Attachment interview aims to understand adults' representations of their attachment relationship through questions involving their memories of their interactions with their parents and periods of separation. It is conducted and audio-taped by a trained researcher or therapist. Audio-taped sessions are then coded into categories that correspond with the original A, B, C and D categories used to code infant attachment security.
Mothers Object Relations (MORs) scale	This is a 15-item short-answer (Likert-scale) questionnaire aimed at understanding the mother's perception of the quality of her relationship with her child.

Children's attachment security and parental sensitivity are traditionally assessed through video-taped observations of the mother and child interacting during the Strange Situation paradigm. Parent and child behaviours are then coded by trained researchers, either with Ainsworth's original scales[95] and/or the Crittenden CARE-Index.[96] Both of these scales can be used to code features of children's attachment security (typically within the discrete A, B, C and D categories) as well as parental sensitivity.

[95] Ainsworth, M. D., & Bell, S. M. (1970), Attachment, exploration, and separation: Illustrated by the behavior of one-year-olds in a strange situation. *Child Development, 41*, 49–67.

[96] Crittenden, P. M. (1988). Relationships at risk. In J. Belsky & T. Nezworski (Eds.), *Clinical implications of attachment* (pp. 136–174). Hillsdale, NJ: Erlbaum.

While the Strange Situation is perhaps the most commonly used method for measuring attachment security, it is not without its drawbacks. The paradigm is time consuming to implement and it can be expensive to train and supervise researchers to accurately code the video-tapes. Researchers have also questioned the extent to which the 20-minute strange situation is sufficient to adequately measure and classify maternal and child attachment-related behaviours.[97,98]

Infant attachment security is also frequently measured with the Attachment Q-set.[99] The Q-set consists of nearly 100 items intended to cover a variety of attachment-related behaviours, including the child's secure base behaviours and positive responding. Trained researchers observe parent and child interaction in a number of environments and then sort the cards in the order in which the child exhibits the item. The overall score for each child will result in a variable ranging from +1.0 (i.e. very secure) to –1.0 (i.e. very insecure).

Attachment security in older preschool children can be measured through story-stem completion tasks, where researchers initiate a story with a doll and then ask the child to complete it.[100] The stories' themes are chosen explicitly to elicit children's feelings of security and their representations of their parents. Children are video-taped when completing this task and their behaviour is then coded by trained researchers.

Parent attachment security is typically measured through the Adult Attachment Interview,[101] which is conducted and audio-taped by a trained researcher or therapist. The interview consists of questions aimed at eliciting the parents' representations of their own attachment history. Parents' representations of their child can be measured through the Mothers Object Relations (MORs) scale,[102] which is a 15-item short-answer questionnaire aimed at understanding the mother's perception of the quality of her relationship with her child. Separate versions of this scale are available for mothers with a child, infant or expecting a baby. Attachment interventions also often target parents' mood and mental health as a primary outcome. Studies therefore often consider improvements in parents' psychological functioning through the use of validated measures and diagnostic interviews of depression, trauma and anxiety.

Children's language and early self-regulatory skills are also thought to be facilitated by sensitive parenting behaviours within the context of a secure attachment relationship. For this reason, many attachment-based programmes also evaluate their impact on children's early language acquisition, cognitive development and early self-regulation skills. The methods for measuring children's self-regulatory processes (including behaviour) and cognitive development are described in greater depth in Chapters 6.

[97] Lamb, M. E., Thompson, R. A., Garnder, W. P., Charnov, E. L., & Estes, D. (1984). Security of infantile attachment as assessed in the 'strange situation': Its study and biological interpretation. *The Behavioural and Brain Sciences, 7*, 127–171.

[98] Rutter, M. (1995). Clinical implications of attachment concepts: Retrospect and prospect. *Journal of Child Psychology and Psychiatry, 36*, 549–571.

[99] Waters, E., & Deane, K. E. (1985). Defining and assessing individual differences in attachment relationships: Q-methodology and the organization of behavior in infancy and early childhood. *Monographs of the Society for Research in Child Development, 50*, 41–65.

[100] Bretherton, I., Ridgeway, D., & Cassidy, J. (1990). Assessing internal working models of the attachment relationship. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the Preschool Years: Theory, Research, and Intervention* (pp. 273–308). Chicago, IL: University of Chicago Press.

[101] Main, M., George, C., & Kaplan, N. (1985). Adult attachment interview. Growing points of attachment theory. Monographs of the Society for Research in Child Development, 50.

[102] Milford, R. (2009). Universal screening and early intervention for maternal mental health and attachment difficulties. *Community Practitioner*, *82*(8), 30–34.

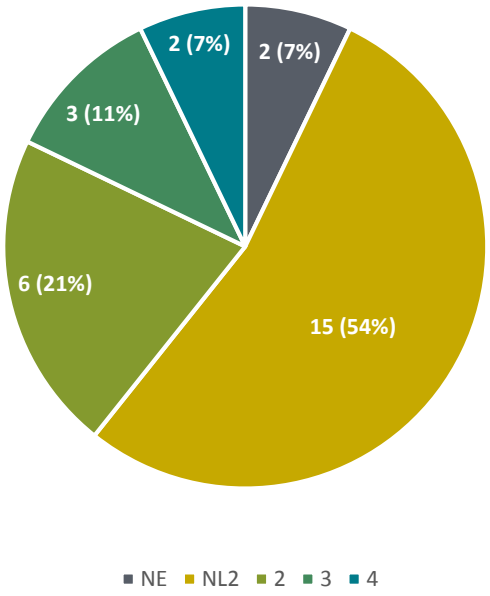
Findings

Our sample includes 28 interventions that primarily aim to support the attachment relationship. Eighty-six percent (24) of these programmes are offered to families before the child's first birthday. Figures 25 through 33 provide an overview of the distribution of these programmes in terms of their level of evidence, level of need, delivery mode and cost.

Strength of evidence

Figure 25 summarises the distribution of the strength of evidence ratings for the 28 attachment interventions.

Figure 25: Attachment programmes by level of evidence (n=28)

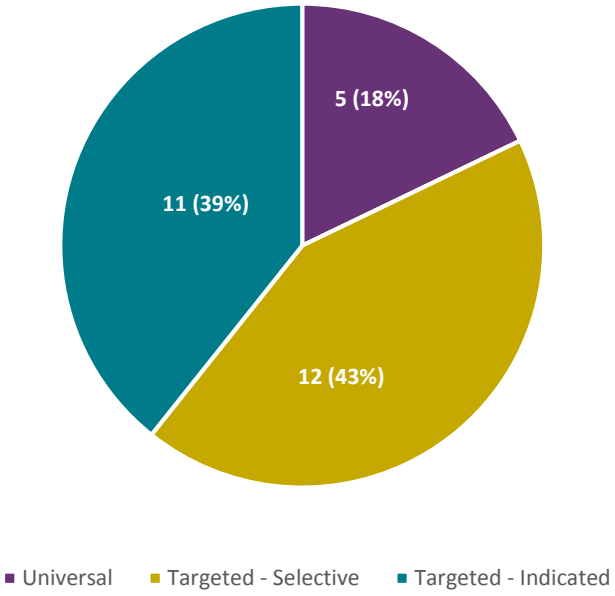


- 2 (7%) of the interventions received a Level 4 or 4+ rating, meaning they have established evidence from two or more RCTs/QEDs
- 3 (11%) received a rating of 3 or 3+, meaning they have evidence from one rigorously conducted RCT/QED
- 6 (21%) received a rating of 2 or 2+, meaning they have preliminary evidence from an evaluation involving a pre/post design or a less rigorous QED
- 15 (54%) did not met the Level 2 threshold (NL2)
- 2 (7%) have evidence from at least one RCT or systematic review suggesting no, or very few, confirmed effects on a parent or child outcome.

Level of need

Figure 26 provides an overview of the attachment interventions by level of need.

Figure 26: Attachment programmes by level of need classification (n=28)



As Figure 26 suggests, the largest category (43%) of attachment interventions is those offered at the Targeted-Selective level – i.e. to families where there is an elevated risk of children having an insecure attachment. Examples of Targeted-Selective programmes include those offered to mothers at risk of post-natal depression, teenage mothers and families living in disadvantaged communities.

A further 39% (11) of attachment-based programmes are offered at the Targeted-Indicated level, where a clear problem has already been identified. Targeted-Indicated programmes include those where the mothers have been diagnosed with depression or another psychological disorder.

Five (18%) of the programmes aimed to support the attachment relationship through Universal support that includes promotional activities (newsletters, practitioner training) and support provided to all parents through universal health visiting.

Figure 27 summarises the strength of evidence of the programmes identified, by the programme's classification in terms of its level of need.

Figure 27: Distribution of evidence within level of need categories for attachment programmes (n=28)

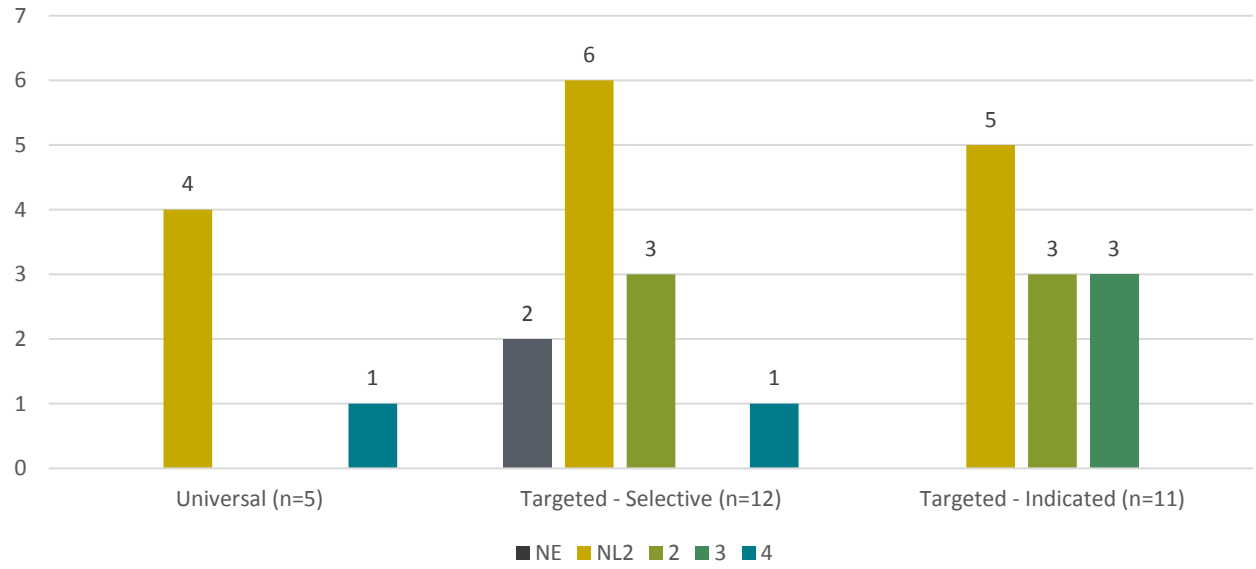


Figure 27 makes clear that evidence-based (Levels 3 and 4) attachment interventions are available at each level of need: Family Foundations at the Universal level, Family Nurse Partnership at the Targeted-Selective level and three variations of Child Parent Psychotherapy at the Targeted-Indicated level. The models of these three programmes will be described in greater detail at later points in this chapter.

Delivery model

Figure 28 summarises the distribution of attachment programmes by delivery model.

Figure 28: Attachment programmes by delivery model (n=28)

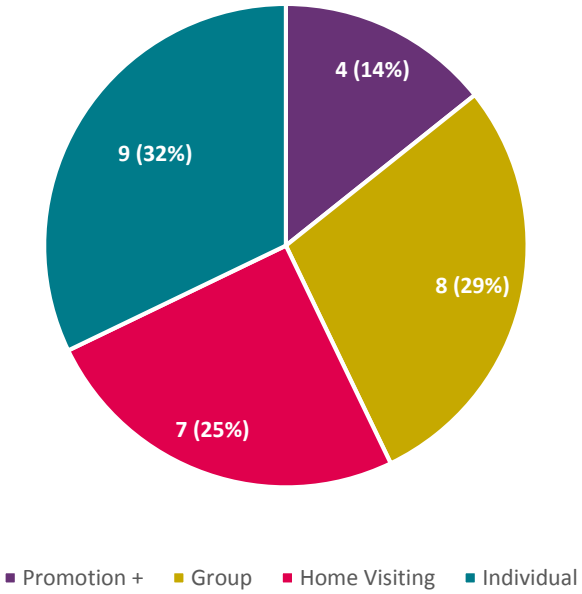
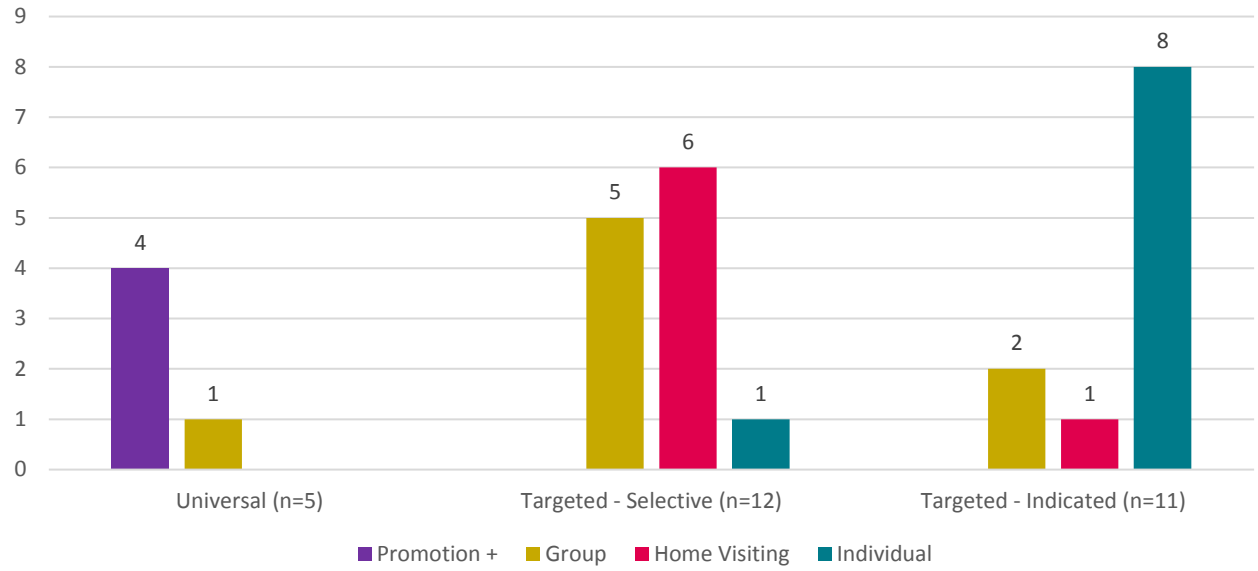


Figure 28 shows a fairly even distribution between individual (9), Home Visiting (7) and Group (8) interventions. Four of the programmes were actually promotional activities aimed at increasing parents' awareness about the attachment relationship. The distribution of strength of evidence for programmes within these delivery model types is summarised in Figure 29 below.

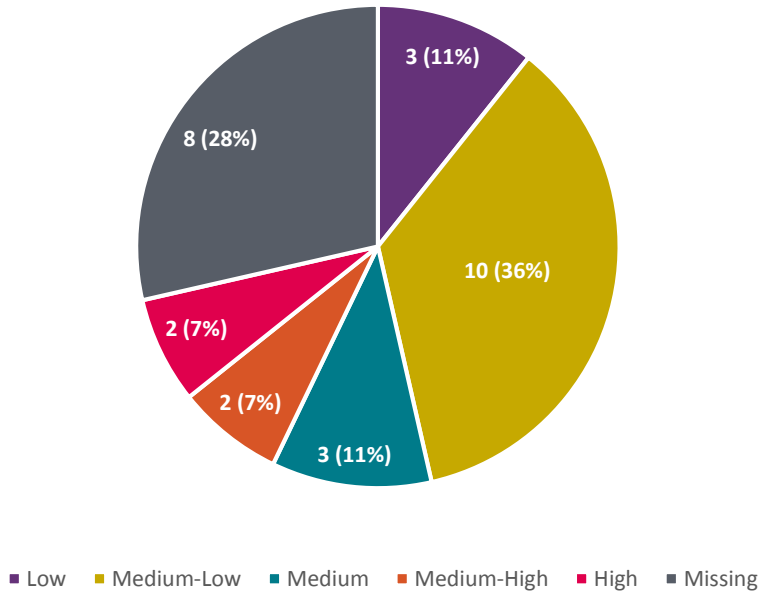
Figure 29: Distribution of delivery models within each level of need for attachment programmes (n=28)



Cost

Figure 30 provides an overview of the attachment programmes in terms of their cost categories.

Figure 30: Attachment programmes by cost rating (n=28)



Cost information was not available for 8 or just over a quarter of the programmes, meaning that conclusions that can be drawn from the costs for attachment programmes are limited.

Figure 31 summarises the distribution of evidence within each cost rating category. As Figure 31 suggests, there are two high-cost evidence-based programmes and one low-cost evidence-based programme. Cost data

was not available for two of the other evidence-based programmes, although they are likely to be medium-high to high-cost programmes, based on the information provided below.

Figure 31: Distribution of evidence within cost ratings for attachment programmes (n=28)

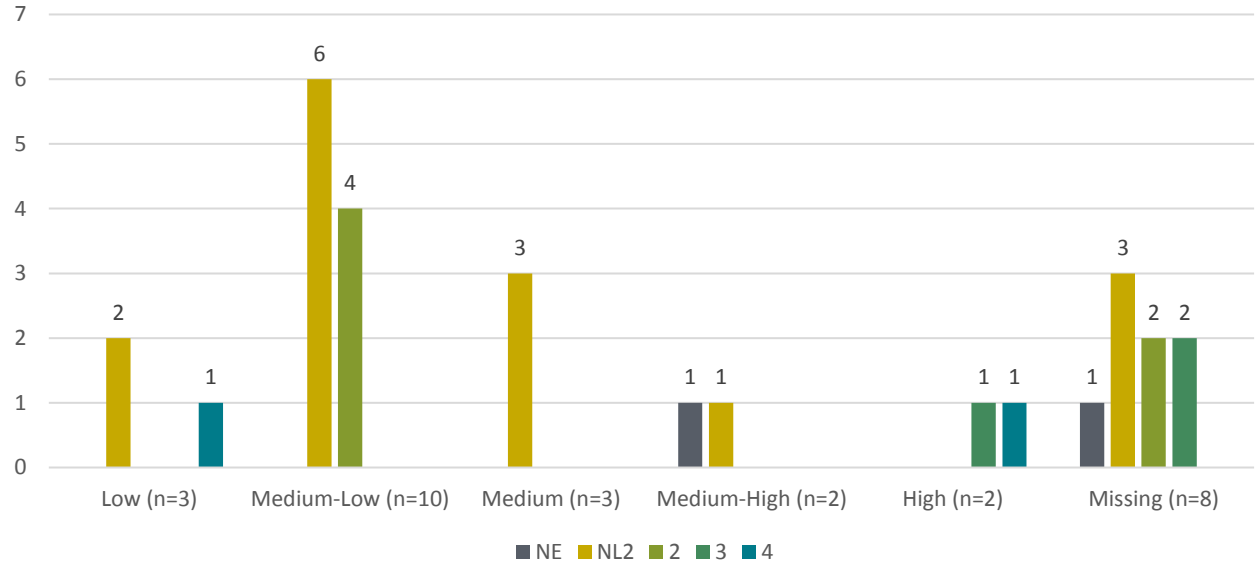
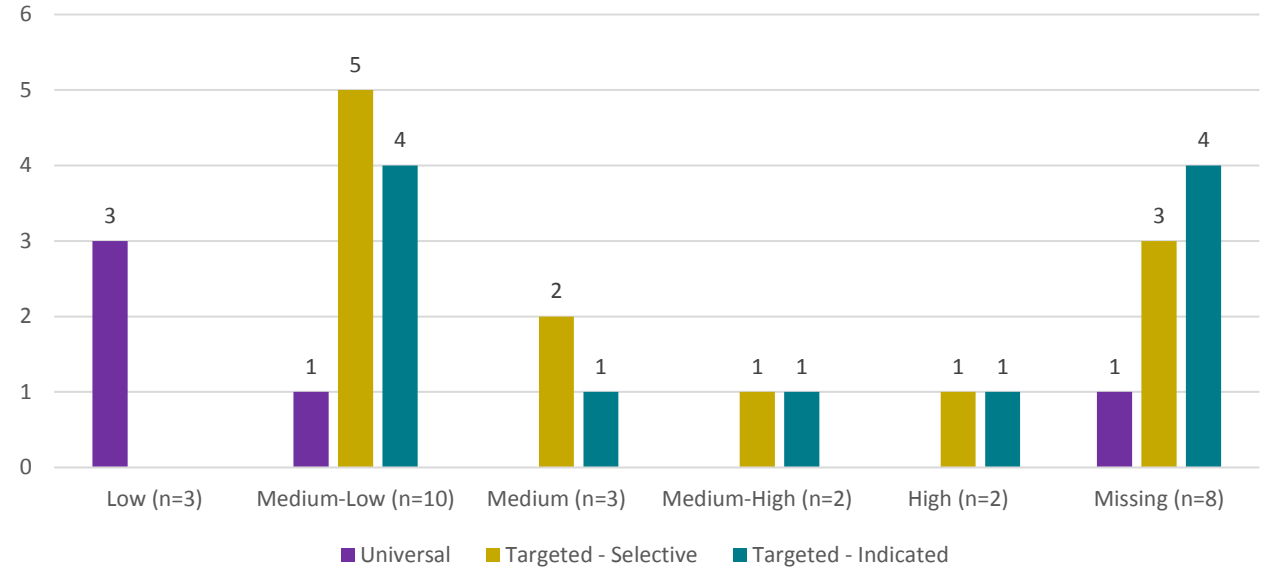


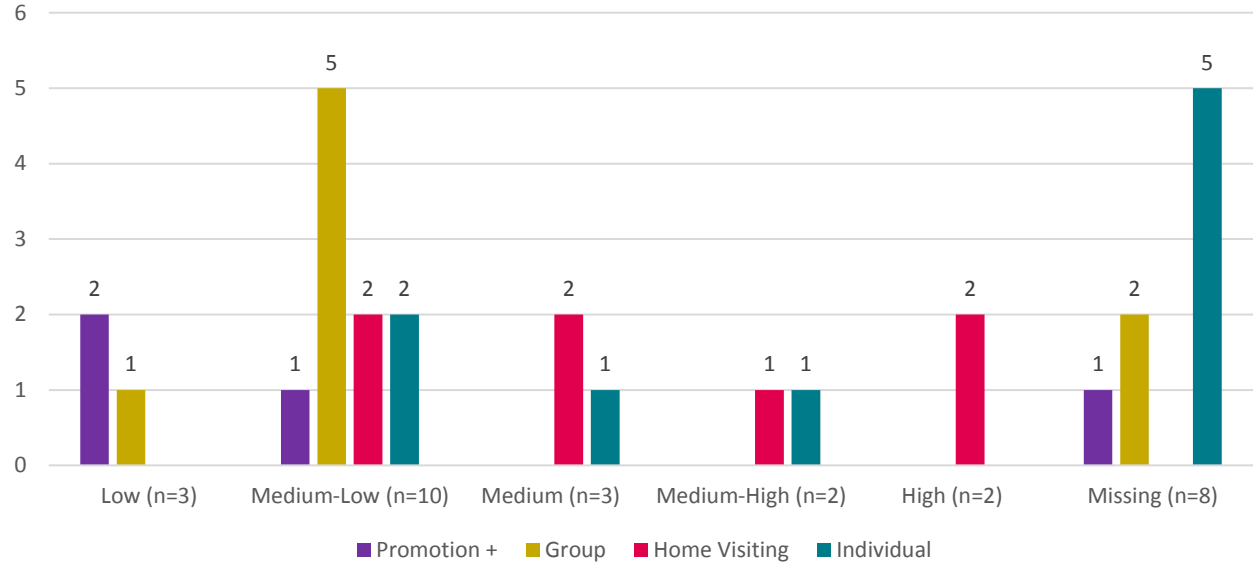
Figure 32 shows the distribution of level of need within each cost rating category. Not surprisingly, Targeted-Selective interventions are higher cost than are programmes available at the Universal level.

Figure 32: Distribution of level of need within cost ratings for attachment programmes (n=28)



This is likely because the Targeted-Selective attachment programmes are home visiting interventions, as summarised in Figure 33. By their nature, Promotion+/short duration programmes are all low cost.

Figure 33: Distribution of delivery model within cost ratings for attachment programmes (n=28)



Discussion of the aggregate findings

The key features of effective attachment-based interventions will be discussed in later points of this chapter. However, there are a number of themes in the aggregate findings worth highlighting here. First, only five (18%) of the attachment-based interventions could be considered evidence-based, with either Level 3 or 4 evidence of improving a child outcome. There are several possible reasons for this. First, attachment security is difficult to measure, as explained in the earlier part of this chapter. Second, the relationships between parenting behaviours, child attachment security and other child outcomes are not yet fully understood. Hence, many of the core mechanisms and primary child outcomes fundamental to designing and evaluating effective interventions are still being specified.[103]

Despite the relative lack of evidence underpinning attachment programmes, there were nevertheless evidence-based models to choose from at the Universal, Targeted-Selective and Targeted-Indicated levels. These interventions encompass a variety of delivery models, including home visiting, individual therapy and group-based interventions. Promotional activities were the only programme model type not supported by robust evidence. This may be due to the fact that promotional activities are difficult to evaluate, but also that the key outcomes of many of the activities were not fully specified. This makes it difficult to determine the specific benefits promotional activities provide to parents and children, but should not be interpreted to mean that they are necessarily of no value.

It is also worth noting that of the three evidence-based models providing cost information, two fell into the highest cost category. As the section below makes clear, this is because these programmes were developed for highly vulnerable families at risk of a disorganised attachment, requiring higher levels of intensive intervention for longer periods of time. It is highly likely that the two evidence-based programmes not providing cost information are also expensive, given that they are delivered for a period of a year by master's-level psychologists.

[103] Waters, E. (2015). Attachment theory and research across the last 30 years: How have we grown and where are we going? Conversation Hour at the 2015 Biennial Conference of the Society for Research in Child Development, 20th March 2015, Philadelphia, PA. https://www.youtube.com/watch?v=bhOeoUs6dwg

Evidence-based attachment programmes

In this section we provide six case examples of programmes with evidence from at least one rigorously conducted (Level 3) impact evaluation. These programmes were chosen to exemplify the ways in which attachment-based interventions can support children's early development, as well as illustrate key points regarding the evidence more generally.

Level 4 or 4+

Family Nurse Partnership

Family Nurse Partnership (FNP) is an intensive home visiting programme delivered by specially trained nurses to first-time young mothers (up to the age of 24, with most clients aged 19 and under). It begins during the mother's pregnancy and then continues until the child's second birthday. FNP was selected as a case example because of its widespread use throughout England, Scotland and Northern Ireland. Disappointing findings from a recently completed UK trial create challenges in understanding its evidence within the UK context. A summary of the FNP programme is provided in Box A. A complete description of the programme's implementation requirements and evidence is provided on our website.

Box A: Family Nurse Partnership

Strength of evidence rating: 4+ **Cost rating:** 5

Most consistent child impacts: Improved attachment security and responsiveness; improved early cognitive skills; reduced behavioural problems in later childhood; reduced child maltreatment.

Most consistent parent impacts: Increased sensitivity; reduced smoking; reduced relationship problems; fewer subsequent pregnancies.

Target population:	**Child's age:**	**Level of need:**
First-time teenage mothers	Antenatal to age two	Targeted-Selective
Type of programme:	**Setting(s):**	**Who can deliver it?**
Home visiting	The mother's home	Lead Practitioner: QCF Level 5 in a helping profession Co-lead Practitioner: QCF Level 3 in a helping profession
Country of origin:	**Where implemented?**	**Where evaluated?**
USA	UK , USA and internationally	USA, UK, Netherlands

Programme description: The Family Nurse Partnership (FNP) programme is a Targeted-Selective intervention delivered by highly trained and supervised nurses who visit first-time young mothers in their home from the time of their first booking until their child's second birthday. During these visits, mothers receive information about their child's development and learn strategies for understanding supporting their child's and their own needs.

FNP was first introduced to the UK in 2007 through a small pilot in ten local authorities. Positive results from its first feasibility study resulted in the rapid expansion of the programme in 2009. FNP has since been rolled out throughout England as part of the Healthy Child Programme, as well as in Scotland and Northern Ireland.

FNP was introduced to the UK on the basis of positive findings from three large-scale RCTs conducted in the United States. All three studies observed consistent and enduring benefits for the young mothers and children

participating in the programme. Maternal benefits included reductions in smoking, improved self-efficacy, reduced number of subsequent pregnancies and an increased likelihood of returning to work or education. Child benefits included improved intellectual development, reduced criminality in adolescence and a decreased risk of preventable death in the late teenage years. A fourth, smaller-scale RCT also observed increased attachment security in children originally classified as having a 'D' or disorganised attachment.[104] The findings from this study are described in greater depth in the case study involving Infant–parent Psychotherapy (see below).

Many of FNP's early benefits were recently replicated in a Dutch trial, which observed, among other things, improved developmental quotients amongst FNP children at age two and a reduced risk of child maltreatment at age three. However, some of these benefits were not upheld in the recently completed UK Building Blocks trial.[105] This study was the largest RCT of FNP to date, involving over 1600 first-time teenage mothers living in communities across England. Its first evaluation published in October 2015 did not find an effect in many of the areas that were expected. There were at least six positive outcomes: intention to breast feed, maternally reported cognitive development at 24 months, language development at 12 and 18 months and early language milestone at 24 months; also levels of social support, partner relationship quality and general self-efficacy. Otherwise, there were no statistically significant differences between the treatment and control groups on any other measure.

The lack of positive findings observed in the Building Blocks trial has caused some (including the study's authors) to question the degree to which FNP provides any substantive value over standard care in the UK. Indeed, the child birth outcomes observed in the UK study were positive for both FNP and non-FNP mothers, suggesting that both groups received adequate maternity care. In contrast, good-quality maternity care is not as accessible to young mothers living in the United States, where they are also more likely to be economically deprived. This means that FNP may provide greater relative value in the United States, resulting in impacts that are easier to measure.

However, it is important to note that the FNP programme was not developed only to improve child birth outcomes.[106] While the programme does include maternity care and advice, the programme also focuses on the quality of mother and child interaction during the child's first two years. From this perspective, the relative advantage of FNP within the UK context may be more evident in the years following the child's birth. So while the trial's initial findings are clearly disappointing, it is likely that many of the programme's benefits have yet to be observed.

The FNP National Unit is nevertheless paying close attention to the findings from the UK trial and is seeking to enhance the delivery of the programme and to increase its efficacy. Specifically, the Unit is investigating methods for targeting the programme, personalising it to local and individual risks and strengths, increasing its reach amongst the most vulnerable young mothers and improving a range of clinical outcomes, including maternal mental health, safeguarding and domestic violence.

It should also be kept in mind that the UK trial *did* observe improvements in children's early language and cognitive development. These findings are consistent with improvements in children's intellectual development observed in three out of the four previous trials and are the primary reason why FNP received a Level 4+ strength of evidence rating. FNP's positive effect on early intellectual development is likely due to the

[104] Stronach, E. P., Toth, S. L., Rogosch, F., & Cicchetti, D. (2013). Preventive interventions and sustained attachment security in maltreated children. *Developmental Psychopathology, 25*, 919–930.

[105] Robling, M., Bekkers, M., Bell, K., Butler, C., Cannings-John, R., Channon, S., Corbacho Martin, B., Gregory, J., Hood, K., Kemp, A., Kenkre, J., Montgomery, A. A., Moody, G., Owen-Jones, E., Pickett, K., Richardson, G., Roberts, Z. E. S., Ronaldson, S., Sanders, J., Stamuli, E., & Torgerson, D. (2016). Effectiveness of a nurse-led intensive home-visitation programme for first-time teenage mothers (Building Blocks): A pragmatic randomised controlled trial. *The Lancet, 387*(10014), 146–155, http://dx.doi.org/10.1016/S0140-6736(15)00392-X

[106] Olds, D. (2016). Building evidence to improve maternal and child health. *The Lancet*, *387*(10014), 105–107.

advice and strategies mothers receive for supporting their children's early learning. FNP's learning outcomes are also consistent with findings from other home visiting programmes and will be discussed in greater depth in Chapter 6.

Family Nurse Partnership: cost and impact

On the basis of information about resource requirements submitted by the provider, EIF has assigned FNP a cost rating of 5, meaning that it is a **high cost** programme to implement. Factors contributing to this rating include the fact that it is provided to mothers on a one-to-one basis over a period of two and a half years (involving approximately 64 sessions lasting one hour each) by highly trained (QCF Level 6) and supervised nurses and health visitors. While these costs are high, the impacts observed on key outcomes in previous trials (including a significantly reduced risk of child maltreatment, significantly reduced behavioural problems in adolescence and a decreased risk of accidental death in early adulthood) suggest a potential 6% return on investment.107 It is important to consider, however, that these cost calculations are not based on the birth outcomes measured in the UK trial, but on longer-term benefits observed in mothers and children in the US studies.

Family Foundations

Family Foundations is described here as an example of how a relatively short intervention with an estimated low cost can provide lasting benefits if offered at a time when parents are motivated to learn new skills and establish effective routines. The programme was first developed in the United States, but has been implemented in various sites across England. A summary of the programme is provided in Box B. A full description of the programme model and its evidence is provided on our website.

Family Foundations is for couples expecting their first child. It can be delivered alongside a standard childbirth class beginning in the mother's second or third trimester. Parents attend five sessions prior to the baby's birth and then reconvene for four additional sessions when the baby is between four and six months old. During these sessions, parents learn strategies for working together effectively as co-parents in managing their child's care and responding to his or her needs.

Family Foundations: cost and impact

Family Foundations (FF) has a cost score of 1, meaning that this programme is estimated to be **low cost** to set up and deliver compared to other interventions reviewed by EIF.

Family Foundations has evidence from two RCTs observing improved relationship satisfaction and functioning amongst Family Foundations participants. In particular, Family Foundations couples were reported to experience significantly less overall parenting stress and greater satisfaction in the sharing of household duties and responsibilities around child care. Family Foundations parents also reported less depression and anxiety in comparison to those not participating in the programme.[108, 109] Although Family Foundations does not specifically target domestic violence, the second RCT observed that Family Foundations parents were significantly less likely to report interpersonal violence towards each other (d = .79) and towards their child (d = .76) one year after birth.[110]

[107] View more at the Investing in Children website. Available at: http://investinginchildren.eu/interventions/family-nurse-partnership

[108] Feinberg, M. E., Kan, M. L., & Goslin, M. C. (2009). Enhancing coparenting, parenting and child self-regulation: Effects of Family Foundations 1 year after birth. *Prevention Science, 10*, 276–285.

[109] Feinberg, M., Jones, D. E., Hostetler, M. L., Roettger, M. E., Paul, I., & Ehrenthal, D. (in press). Couple-focused prevention at the transition to parenthood: Effects on coparenting, parenting, family violence, and parent and child adjustment.

[110] Kan, M. E., & Feinberg, M. E. (2015). Impacts of a coparenting-focused intervention on links between pre-birth intimate partner violence and observed parenting. *Journal of Family Violence, 30*, 363–372.

Family Foundations participants also reported greater ease in establishing infant sleep routines and greater confidence in their ability to soothe their child at six and ten months. While attachment security was not directly assessed through the Strange Situation, coded video-taped observations of parent–child interaction at ten months suggested that Family Foundations children were better able to soothe themselves (effect sizes range from d = .21 to d = .46). These self-soothing behaviours are thought to be an indication of attachment security.

Box B: Family Foundations

Strength of evidence rating: 4 **Cost rating:** 1

Most consistent child impacts: Improved attachment-related behaviours, including infant soothing; improved behaviour at age three; improved prosocial behaviour at school at age seven.

Most consistent parent impacts: Greater ease in establishing sleep routines; improved co-parenting behaviours; reduced interpersonal violence; reduced parent–child violence; reduced parent stress; reduced parent depression.

Target population:	**Child's age:**	**Level of need:**
First-time expectant couples	Antenatal to age two	Universal
Type of programme:	**Setting(s):**	**Who can deliver it?**
Group	Any community venue	Lead Practitioner: QCF Level 5 in a helping profession Co-lead Practitioner: QCF Level 3 in a helping profession
Country of origin:	**Where implemented?**	**Where evaluated?**
USA	USA, UK	USA

Programme description: Family Foundations is for all couples expecting their first child. The programme takes place during the third trimester of the mother's pregnancy through five group sessions that can be embedded in a standard childbirth class. During these sessions, parents learn strategies for establishing a positive co-parenting relationship when the baby arrives. These strategies include effective methods of communication, systems for establishing shared childcare routines, and techniques for reducing stress and interpersonal conflict. The programme then pauses until the baby is two to six months old, when the couples reconvene for four more sessions to learn further strategies for strengthening the co-parenting relationship. Parents also receive coaching on how to respond more sensitively to their child, enhance children's emotional security, and discourage unwanted child behaviour.

The longer-term benefits are seen in two follow-up studies taking place when the children were 3.5 and 7 years of age. Both follow-ups observed consistent reductions in aggression amongst Family Foundations boys. The sons and daughters of Family Foundations participants were also significantly more likely to demonstrate higher social competence at 3.5 years, and reduced internalising behaviours at age 7 as reported by their teachers (who did not have knowledge of the children's participation in the programme).[111, 112] Teachers also reported that children of programme couples at higher prenatal risk (due to elevated levels of couple conflict) demonstrated better academic adjustment and motivation compared to their control counterparts.

[111] Feinberg, M. E., Jones, D. E., Kan, M. L., & Goslin, M. (2010). Effects of a transition to parenthood program on parents, parenting, and children: 3.5 years after baseline. *Journal of Family Psychology, 24*, 532–542.

[112] Feinberg, M. E., Jones, D. E., Roettger, M. E., Hostettler, M., & Solmeyer, A. (2014). Long-term follow-up of a randomized trial of Family Foundations: Effects on children's emotional, behavioral, and school adjustment. *Journal of Family Psychology, 28*, 821–831.

Level 3 or 3+

Child-Parent Psychotherapy (Lieberman model)

Child-Parent Psychotherapy (CPP) is the name for a set of programmes developed by Alicia Lieberman and colleagues for children who are at risk of an insecure attachment and/or at least one traumatic event in their early childhood. It has separate bodies of evidence as delivered to parents with infants, toddlers and children. We describe it here as one of the few attachment-based interventions with specific evidence of improving children's attachment security.

Child-Parent Psychotherapy is a form of Parent–infant Psychotherapy which aims to improve children's attachment security and early self-regulatory development through therapeutic support provided to both the mother and infant. Parent-infant psychotherapy is a generic term for interventions are based primarily on the 'transmission model' first developed by Selma Fraiberg and colleagues, which assumes that parents' interactions with their children are influenced by 'ghosts in their nursery' – i.e. painful memories from the parents' past.[113,114] A primary aim of the approach is to help mothers recognise how these ghosts might negatively inform their internal representations of their children's behaviour and place the attachment relationship at risk.[115,116,117] PIP therapists therefore work closely with parents to help them appropriately interpret their child's behaviour and respond sensitively to his or her needs.

Fraiberg's ideas and variations of the PIP approach have been incorporated into clinical practice with mothers and their children since the mid-1980s. Alicia Lieberman was one of the first to develop Fraiberg's ideas into a manualised programme that can be delivered in a consistent way. It is described here as one of the only applications of Fraiberg's ideas with evidence from at least one well-conducted RCT of improving children's attachment security. Although other PIP programme models exist, this review did not identify any with evidence of improving children's attachment security from a rigorously conducted (Level 3) evaluation.[118] While it is clear that parent–infant psychotherapy is offered through child and adolescent mental health services across the UK, the extent to which the Lieberman model is specifically used is not clear.

The Lieberman core model involves weekly sessions that take place for a year or longer. During these sessions, the practitioner uses empathic, non-didactic methods to help the mother reflect on the ways in which childhood issues may be impacting on her current relationship with her child. These sessions include joint play activities with the children that allow the practitioner to demonstrate sensitive responding and suggest positive explanations for the child's behaviour. Three variations have been developed for three separate periods of early child development: infant–parent psychotherapy (IPP), toddler–parent psychotherapy (TPP) and child–parent psychotherapy (CPP). Both IPP and CPP have Level 3+ evidence and are summarised in Boxes C and D. The TPP model is similar to IPP and has Level 2+ evidence. Full descriptions of all three programme models and their evaluation evidence are provided on the EIF website – here for IPP, here for TPP, and here for CPP.

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[113] Fraiberg, S., Adelson, E., & Shapiro, V. (1980). Ghosts in the nursery: A psychoanalytic approach to the problem of impaired infant-mother relationships. *Journal of the American Academy of Child Psychiatry, 14*, 387–421.

[114] Lieberman, A. F. (1992). Infant-parent psychotherapy with toddlers. *Development and Psychopathology, 4*, 559–574.

[115] Lieberman, A. F. (1991). Attachment theory and infant-parent psychotherapy: Some conceptual, clinical and research considerations. In D. Cicchetti & S. L. Toth (eds.), *Rochester Symposium on Developmental Psychopathology: Models and Integrations* (pp. 261–287). Rochester, NY: University of Rochester Press.

[116] Lieberman, A. F. (1992). Infant-parent psychotherapy with toddlers. *Development and Psychopathology, 4*, 559–574.

[117] Lieberman, A. F., & Pawl, J. H. (1988). Clinical applications of attachment theory. In J. Belsky and T. Nezworski (Eds.) *Clinical Implications for Attachment* (pp. 325–351). Hillsdale, NJ: Erlbaum.

[118] Barlow, J., Bennett, C., Midgely, N., Larkin, S. K., & Wei, Y. (2015). Parent-infant psychotherapy for improving parental and infant mental health (review). *The Cochrane Library*, Issue 1.

Infant-Parent/Child–Parent Psychotherapy: cost and impact

Cost information for either version of Child–Parent Psychotherapy was not provided. However, evaluations of both CPP and IPP suggest significant reductions in a variety of important outcomes. The impacts for both programmes are described below.

Box C: Infant–Parent Psychotherapy (IPP)

Strength of evidence rating: 3+ **Cost rating:** Not provided

Most consistent child impacts: Improved attachment security

Most consistent parent impacts: Increased empathy

Target population:	**Child's age:**	**Level of need:**
Mothers at risk of an insecure attachment	Infants	Targeted-Indicated
Type of programme:	**Setting(s):**	**Who can deliver it?**
Individual therapy	The clinic or home	Practitioners with a QCF Level 6 qualification in Psychology or Social work
Country of origin:	**Where implemented?**	**Where evaluated?**
USA	USA, UK	USA

Programme description: Infant–Parent Psychotherapy (IPP) is a psychoanalytic intervention targeting mother–infant dyads who may be at risk of an insecure attachment. Mothers identified as being depressed, anxious, traumatised or at risk of maltreating their child attend weekly sessions with their infant (< 6 months) for a period of 12 months or longer. The sessions are delivered by practitioners with a Master's (or higher) qualification in psychology or social work.

During each session, the practitioner helps the mother reflect on her childhood experiences and differentiate them from her current relationship with her child through empathic, non-didactic support. The practitioner also engages jointly with the mother and infant, so that he/she can model sensitive responding and suggest positive explanations for the child's behaviour. As the therapeutic relationship develops, the mother learns to dissociate negative feelings informed by her own childhood from her interactions with her infant and appropriately interpret her infant's behaviours.

Infant–Parent Psychotherapy

Infant–Parent Psychotherapy (IPP) is the first of the three Lieberman programmes. It has evidence from two RCTs completed in 1991 and 2006.[119] Findings from the second (2006) trial are particularly noteworthy, as they observed a dramatic drop in the number of IPP infants assessed as having a disorganised attachment. Specifically, mothers at risk of maltreating their 12-month infant were assigned to IPP, a variation of FNP for older children (see above) or treatment as usual (TAU).[120] After one year of treatment, the study observed a statistically significant drop in the number of children classified as having a disorganised attachment for both

[119] Lieberman, A. F., Weston, D. R., & Pawl, J. H. (1991). Preventive intervention and outcome with anxiously attached dyads. *Child Development, 62*, 199–209.

[120] Cicchetti, D., Rogosch, F. A., & Toth, S. L. (2006). Fostering secure attachment in infants in maltreating families through preventive interventions. *Development and Psychopathology, 18*, 623–649.

the FNP (43%) and IPP (55%) groups in comparison to families receiving TAU (15%).[121] However, only the IPP children remained securely attached in the one-year follow-up study.[122]

It is noteworthy that the 2006 study also collected information about mothers' sensitivity, attachment representations and levels of stress. This information was obtained specifically to consider the extent to which these maternal behaviours mediated changes in infants' attachment security. Interestingly, the study found that none of these maternal behaviours were associated with changes in children's attachment security despite being linked to child outcomes in previous research. The extent to which these maternal behaviours actually improved during the course of the intervention was not reported, however. IPP does have evidence of improving mothers' empathy from its less robust (Level 2+) 1991 study, which also observed improvements in infant attachment security – although the extent to which maternal behaviours mediated children's attachment security was not reported.

Child–Parent Psychotherapy

Positive maternal outcomes have also been observed in an RCT involving Child–Parent Psychotherapy (CPP) which targets families with a child between the ages of three and five.[123] CPP is similar to IPP in that it works directly with mothers to improve their representations of their child through weekly sessions that take place for a year or longer. However, the sessions include therapist-facilitated play activities that help the mother and child work through trauma-related feelings. During these sessions, mothers also receive advice about age-appropriate child discipline and are helped to understand their child's moods and emotional states.

CPP's most robust (Level 3) study observed significant improvements in mothers' and children's symptoms of PTSD in a sample of families experiencing domestic violence. There were also significant improvements in the behaviour of the child participants, as measured by the Child Behavioural Checklist when the intervention was completed and at the six-month follow-up. These findings are consistent with those in an earlier, less robust trial (Level 2+) observing improvements in children's representations of their mother and improved expectations of the mother–child relationship.[124,125,126]

[121] Stronach, E. P., Toth, S. L., Rogosch, F., & Cicchetti, D. (2013). Preventive interventions and sustained attachment security in maltreated children. *Developmental Psychopathology, 25*, 919–930.

[122] Stronach, E. P., Toth, S. L., Rogosch, F., & Cicchetti, D. (2013). Preventive interventions and sustained attachment security in maltreated children. *Developmental Psychopathology, 25*, 919–930.

[123] Lieberman, A. F., Van Horn, P. J., & Ghosh Ippen, C. (2005). Toward evidence-based treatment: Child-parent psychotherapy with preschoolers exposed to marital violence. *Journal of the American Academy of Child and Adolescent Psychiatry, 44,* 1241–1248.

[124] Lieberman, A. F., van Horn, P., & Ghosh Ippen, C. (2005). Toward evidence-based treatment: Child-parent psychotherapy with preschoolers exposed to marital violence. *Journal of the American Academy of Child and Adolescent Psychiatry, 44,* 1241–1248.

[125] Lieberman, A. F., Ghosh Ippen, C., & van Horn, P. (2006). Child-parent psychotherapy: 6-month follow-up of a randomized controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 45,* 913–918.

[126] Toth, S. L., Maughan, A., Manly, J. T., Spagnola, M., & Cicchetti, D. (2002). The relative efficacy of two interventions in altering maltreated preschool children's representational models: Implications for attachment theory. *Development and Psychopathology, 14*, 877–908.

Box D: Child–Parent Psychotherapy (CPP)

Strength of evidence rating: 3+ **Cost rating:** Not provided

Most consistent child impacts: Improved attachment security; reduced symptoms of trauma; improved behaviour

Most consistent parent impacts: Reduced symptoms of PTSD

Target population: Children at risk of an insecure attachment because of experiences of trauma	**Child's age:** 3 to 5	**Level of need:** Targeted-Indicated
Type of programme: Individual therapy	**Setting(s):** The clinic or home	**Who can deliver it?** Practitioners with a QCF Level 6 qualification in Psychology or Social work
Country of origin: USA	**Where implemented?** USA, UK	**Where evaluated?** USA

Programme description: Child–Parent Psychotherapy (CPP) is a psychoanalytic intervention for mothers and preschool children (aged three to five) who may have experienced trauma or abuse (e.g. domestic violence), or are otherwise at risk of an insecure attachment and/or other behavioural and emotional problems. Specifically, CPP aims to improve children's representations of their relationship with their parent and reduce maternal and child symptoms of psychopathology.

Mothers and their child attend weekly sessions for a period of 12 months or longer. The sessions are delivered by practitioners with a Master's (or higher) qualification in psychology or social work. During each session, the practitioner uses empathic, non-didactic support to help the mother reflect on her childhood experiences and differentiate them from her current relationship with her child. Parent sessions are interspersed with sessions involving the child, where the mother, therapist and child jointly engage in structured play aimed at eliciting trauma-related feelings and behaviours. This allows the therapist to help the mother and child develop a joint narrative around the traumatic events and bring them to their resolution. Mothers also receive support in appropriate discipline and an increased awareness of their child's moods and emotional states.

Child First

Child First is a home-based 'system of care' targeting families with a child who may be at risk of emotional problems, developmental delay, abuse and neglect. Infant–parent or Child–parent psychotherapy (depending on the child's age) is embedded within the programme in conjunction with other activities. These activities include increased access to community support, child care and preschool depending on each family's specific needs. CPP is always delivered as a core component of the programme.

Child First has not yet been implemented in the UK, but is described here because of its relevance for the UK Troubled Families initiative. The programme model is described in Box E. Further details about the model, its implementation requirements and evidence are provided on the EIF website.

Child First: costs and impact

Child First is a high-cost programme to implement with a cost rating of 5. Factors contributing to this rating include the fact that participants receive one-to-one support lasting over a year from two practitioners: a QCF Level 5 practitioner who is responsible for each family's plan and therapeutic support from a QCF Level 7/8 clinician who provides the Child–Parent psychotherapy.

Child First has evidence from a single Level 3 study involving families with an infant between 6 and 36 months. Although the programme targets a variety of risk factors and age groups, children in this RCT were eligible if they were between 6 and 36 months of age and there was an indicated child social-emotional problem and⁄or the parent screened high for a psychosocial risk. While children's attachment security was not explicitly measured, the study did observe improvements in children's behaviour and language and reductions in parent-reported stress after completing one year of the programme. The study additionally observed reduced rates of reported child maltreatment amongst programme participants at a three-year follow-up.

Box E: Child First

Strength of evidence rating: 3 **Cost rating:** 5

Most consistent child impacts: Improved language; improved behaviour; reduced behavioural problems.

Most consistent parent impacts: Reduced symptoms of psychotherapy; reduced symptoms of depression; reduced stress.

Target population:	**Child's age:**	**Level of need:**
Children at risk of emotional problems and developmental delay	Infancy; Toddlerhood	Targeted-Indicated
Type of programme:	**Setting(s):**	**Who can deliver it?**
Home visiting	The home	1st Practitioner: QCF 7/8 2nd Practitioner: QCF 6

Programme description: Child First is a home-based, therapeutic intervention targeting young children at risk of emotional problems, developmental delay and abuse and neglect. The Child First model aims to bridge Universal, Targeted and Specialist/Intensive services to provide a tailored package of support to meet the unique needs of each family. The programme is delivered by two practitioners: a QCF Level 5 practitioner who connects families to community-based services as part of their family-driven plan and a QCF Level 6 (Master's) qualified psychologist who provides home visiting support.

Child First begins with a comprehensive needs assessment of each family's specific strengths and weaknesses. Motivational interviewing is used during these first visits to actively engage and recruit parents to the programme. Practitioners also learn strategies for recruiting parents who initially refuse programme participation. Once the family and practitioners have agreed a plan, weekly home visits begin for a period of six to twelve months. Each visit lasts between 45 and 90 minutes, depending on the family's needs and the number of family members present. During these sessions, family members receive Child–Parent Psychotherapy (CPP).

No Effect

Two attachment-based programmes (the Social Baby and the Maternal Early Childhood Sustained Home-Visiting) had evidence from one rigorously conducted evaluation observing no effect on any child outcome within the scope of this review. Findings from the evaluation of the Social Baby programme are presented here as a case study, since the intervention (also referred to as active listening visits) was at one point in widespread use through health visiting services across the UK.

The Social Baby

The Social Baby programme is a Targeted-Selective intervention designed specifically to increase attachment security amongst infants born to mothers at risk of antenatal depression because of high levels of social disadvantage. The programme details are described in Box F and further details about the programme's implementation requirements and evidence are provided on the EIF website.

Box F: The Social Baby

Strength of evidence rating: NE

Cost rating: Not provided

Most consistent child impacts: None observed

Most consistent parent impacts: None observed

Target population:	**Child's age:**	**Level of need:**
Mothers at risk of postnatal depression	Antenatal	Targeted-Selective
Type of programme:	**Setting(s):**	**Who can deliver it?**
Home visiting	The home	Health Visitors
Country of origin:	**Where implemented?**	**Where evaluated?**
UK	UK, South Africa	UK, South Africa

Programme description: The Social Baby programme was developed at the Winnicott Research Unit at the University of Reading for mothers at risk of depression. The original application of the programme was in an impoverished peri-urban area in South Africa. In this form, the programme starts during the last trimester of a mother's pregnancy and continues until the infant is six months old. Highly trained and supervised volunteers deliver 16 sessions to the following schedule:

- Two during the antenatal period
- Weekly for the first eight weeks after the baby's birth
- Fortnightly for the following two months
- Monthly for the last two months.

More recently a two-month version of the programme was trialled in the UK. The structure of intervention visits was the same in both trials. During the antenatal and postnatal visits, mothers learn about their baby's social capabilities and receive coaching on responding to their infant's cues through demonstrations utilising items from the neonatal behavioural assessment schedule (NBAS).

The Social Baby programme has evidence from two rigorously conducted RCTs – the first taking place in Khayelitsha, South Africa and the second occurring in the UK. This first study observed Social Baby mothers to be significantly more sensitive and less intrusive when interacting with their infant at 6 and 12 months than

mothers in the comparison group. Social Baby infants were also significantly more likely to be classified as securely attached at 18 months. However, the relationship between improvements in mothers' and infants' behaviour was not statistically significant and there appeared to be no benefits to mothers in terms of reductions in their symptoms of depression.[127]

These findings were not replicated in the UK trial, involving 190 mother/infant pairs living in the Reading community. The study observed no benefits for mothers or children, despite the fact that the mothers believed the intervention to be beneficial. When contrasting these findings to the South African study, the authors observed that the South African mothers appeared more motivated than the UK participants and were therefore more engaged with the programme. Ultimately, the providers concluded that 'a preventive intervention, delivered by health visitors to a high-risk UK sample, which focuses on the mother-infant relationship, is likely to have no effect, both at preventing the maternal mood disorder and the associated mother-infant relationship disturbances.'[128]

The findings from the Social Baby trial are disappointing and unfortunately consistent with those observed in other studies involving interventions aiming to improve outcomes in depressed mothers and their children.[129] However, a number of clinical trials (not covered in this review) suggest that other forms of adult therapy, such as CBT, may be beneficial for reducing mothers' symptoms of depression and potentially their children's behavioural problems.[130] There is also evidence to suggest that antidepressants may improve maternal mood, although the extent to which they are safe and effective during the postnatal period remains controversial.[131]

More broadly, the findings from the Social Baby trial suggest a gap in our knowledge about how to prevent and treat depressed mothers in a way that also improves outcomes for children. This gap is particularly significant, given strong and consistent evidence linking maternal depression to a variety of negative outcomes throughout children's development.[132,133,134] Collectively, the findings suggest a need for more research into the efficacy of various forms of adult therapy on child outcomes, as well as a deeper understanding of the risks and benefits of anti-depressants during the postnatal period.

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[127] Cooper, P. J., Tomlinson, M., Swartz, L., Landman, M., Monteno, C., Stein, A., McPherson, K., & Murray, L. (2009). Improving quality of mother-infant relationship and infant attachment in socioeconomically deprived community in South Africa: Randomised controlled trial. *BMJ*, *338*, 1–8.

[128] Cooper, P. J., De Pascalis, L., Woolgar, M., Romaniuk, H., & Murray, L. (2014). Preventing postnatal depression by targeting the mother - infant relationship: A randomised controlled trial. *Primary Healthcare Research & Development, 15,* DOI:10.1017/S146342364000401

[129] Brummelte, S., & Galea, L. A. M. (2016). Postpartum depression: Etiology, treatment and consequences for maternal care. *Hormones and Behaviour, 77*, 153–166.

[130] Milgrom, J., Gemmill, A. W., Ericksen, J., Burrows, G., Buist, A., & Reece, J. (2015). Treatment of postnatal depression with cognitive behavioural therapy, sertraline and combination therapy: A randomised controlled trial. *Australian and New Zealand Journal of Psychiatry, 49*, 236–245.

[131] De Crescenzo, F., Perelli, F., Armando, M., & Vicari, S. (2014). Selective serotonin reuptake inhibitors (SSRIs) for post-partum depression (PPD): A systematic review of randomized clinical trials. *Journal of Affective Disorders, 152–154*, 39–44.

[132] Child Trends Databank (2014). Parental depression: Indicators on children and youth. Available: http://www.childtrends.org/wp-content/uploads/2014/08/54_Parental_Depression1.pdf.

[133] Kiernan, K. D., & Huerta, M. C. (2008). Economic deprivation, maternal depression, parenting and children's cognitive and emotional development in early childhood. *British Journal of Sociology, 59*, 783–806.

[134] Barker, E. D., Copeland, W., Maughan, T., Jaffee, S. R., & Uher, R. (2012). Relative impact of maternal depression and associated risk factors on offspring psychopathology. *The British Journal of Psychiatry, 200*, 124–129.

Summary of key messages

This chapter summarises of the EIF assessment ratings for 28 attachment-based programmes originally identified in the Best Start at Home review. The assessment process identified five interventions considered as evidence-based: two with Level 4 or 4+ evidence and three with Level 3 or 3+ evidence. These programmes represent 18% of all attachment-based interventions assessed. The proportionately low number of evidence-based attachment programmes is likely due to the fact that attachment-based interventions are relatively new and that attachment security is challenging to measure.

The effective interventions identified here include Family Nurse Partnership, Family Foundations, two versions of the Lieberman model of Child–Parent Psychotherapy and the Child First programme. FNP has established evidence (Level 4+) of improving a variety of child and parent outcomes, including attachment security in the short term, children's early language development and reduced risk of preventable death in early adulthood. The majority of this evidence comes from three RCTs conducted in the United States and one that is ongoing in the Netherlands. Findings from a recent trial conducted in England and Wales suggest that FNP may not be as effective in the UK, although significant improvements in children's language and cognitive development were consistent with findings from three of the previous trials conducted in the other countries.

Family Foundations also has established evidence (Level 4) of improving attachment-related behaviours in the first year, and children's behaviour at school up to age seven. Family Foundations is a Universal programme for couples expecting their first child. This programme occurs in the last trimester in the mother's pregnancy and then again when the baby is six months old. During these sessions, parents learn effective co-parenting strategies and methods for establishing family routines. It is a good example of a relatively low-cost intervention with good evidence of long-term benefits for children and parents. It is also one of only two Universal interventions identified in this review as evidence-based. The success of this programme is likely linked to the timeliness of the programme's advice offered to couples during the antenatal period, when they are particularly motivated to learn about their child's development and establish positive routines.

Three programmes found to have Level 3 evidence are based on the Lieberman version of Infant–Parent Psychotherapy. The Lieberman version of Infant–Parent Psychotherapy is the only programme identified in this report with robust long-term evidence of improving children's attachment security. Two versions of this programme (Infant–Parent Psychotherapy, Child–Parent Psychotherapy) have evidence of providing benefits to both parents and children, including reductions in reported cases of child maltreatment. The Child First programme, which includes Infant–Parent Psychotherapy embedded within a suite of other activities, additionally has evidence of reducing the risk of child maltreatment.

Two attachment-based interventions have robust evaluation evidence of not providing substantial benefits for parents or children. These include Maternal Early Childhood Sustained Home-Visiting (MECSH) and the Social Baby programme. The disappointing findings from the recent Social Baby trial point to the need for better research investigating the effectiveness of adult therapies for depressed parents on child outcomes. The implications of these findings will be discussed in greater depth at the end of the report.

Evidence-based attachment programmes at a glance

Universal:	The **Family Foundations** programme was developed as a universal intervention for couples expecting their first child. It is assessed as having **Level 4** evidence from two rigorously conducted RCTs. The first of these has short-term evidence of improving co-parenting skills and reducing family conflict, as well as improving children's attachment-related behaviours. This study has also observed long-term improvements in children's behaviour at school. The second trial has reconfirmed the programme's short-term benefits for parents and children.
Targeted-Selective:	The **Family Nurse Partnership** programme was developed to improve the life chances of first-time teenage mothers and their babies. It has **Level 4+** evidence of improving children's behaviour and intellectual development from four RCTs conducted in the US and Netherlands. One of these studies has also observed reductions in preventable deaths in early adulthood. Initial findings from a recently completed UK trial are disappointing, but nevertheless confirm improvements in children's intellectual functioning, similar to those observed in previous FNP trials.
Targeted-Indicated:	**Child–Parent Psychotherapy** was developed by Alicia Lieberman to increase children's attachment security through therapeutic support for the mother and infant. Both of its variants (Infant–Parent and Child–Parent Psychotherapy) have **Level 3+** evidence of improving children's attachment security amongst families where there is an identified risk of an insecure attachment. The **Child First** programme includes Infant–parent/Child–parent psychotherapy within a broader package of care for highly vulnerable families. Child First was assessed as having **Level 3** evidence of improving children's language development and reducing reported cases of child maltreatment from a recently completed US trial.
No effect:	The **Social Baby** programme was developed to increase attachment security in families where there is a known risk of maternal depression. A recently completed UK trial found that the programme had **no effect** in reducing symptoms of maternal depression or improving children's attachment security.

Chapter 5

Interventions that help parents manage their children's behaviour

Hitting, screaming and biting are not normal adult behaviours. They are, however, fairly common for a two-year-old child. In fact, human beings are at their most physically aggressive between the ages of two and three.[135]

Aggressive and defiant behaviours in toddlerhood are a normal part of early development. The tantrums typical of this period reflect the toddler's growing independence expressed through immature communication and self-regulatory skills.[136] Over time, most children replace aggressive behaviours with more sophisticated methods of negotiation and impulse control. However, a minority (between 5 and 15%) will carry on behaving aggressively once they enter school.[137,138,139] Research consistently suggests that certain parenting behaviours actually increase the likelihood that children will carry on behaving aggressively as they grow older.[140]

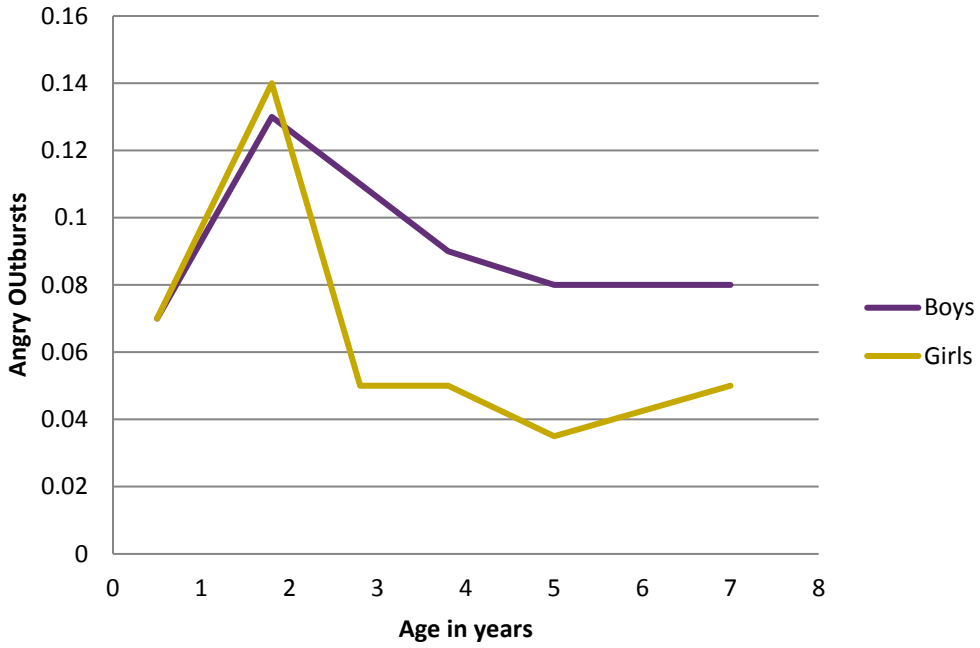
This chapter considers the strength of evidence underpinning interventions that teach parents strategies for managing and reducing their child's aggressive and noncompliant behaviour. When targeted and implemented properly, some of these programmes have the potential to improve children's behaviour at school and prevent antisocial behaviour when they are older. We consider these programmes first in terms of their underpinning theories and primary short- and long-term outcomes. We then present aggregate findings involving the strength of their evidence and costs. Six case examples are used to illustrate key points about when, how and for whom they are most effective. The chapter concludes with a set of recommendations for how these interventions might be commissioned to improve children's behaviour in the short-term and reduce their involvement in crime over time.

Aggressive and noncompliant behaviour in early childhood

In 1931, developmental psychologist Florence Goodenough asked 45 mothers to keep a daily diary of their children's angry outbursts over a period of one month.[141] The children's ages ranged between seven months and seven years. The mothers reported a total of 1,878 outbursts, reflecting large variations in the rates of their children's angry behaviour (Figure 34). The highest rate was for a 19-month boy who averaged four angry outbursts per day. The lowest rate was for a five-year-old girl, who averaged four angry outbursts in two weeks.

[135] Tremblay, R. E., Nagin, D. S., Seguin, J. R., Zoccolillo, M., Zelazo, P. D., Boivin, M., Perusse, D., & Japel, C. (2004). Physical aggression during early childhood: Trajectories and predictors. *Pediatrics, 114*, 43–50.
[136] Roben, C. K. P., Cole, P. M., & Armstrong, L. M. (2013). Longitudinal relations among language skills, anger expression, and regulatory strategies in early childhood. *Child Development, 84*, 891–905.
[137] Tremblay, R. E., Pihl, R. O., Vitaro, F., & Dobkin, P. L. (1994). Predicting early onset of male antisocial behaviour from preschool behaviour. *Archives of General Psychiatry, 51*, 732–739.
[138] Task Force (2006). Tackling antisocial behaviour and its causes. Home Office (UK), Dept. of Justice Affairs.
[139] Kim-Cohen, J., Arseneault, L., Newcombe, R., Adams, F., Bolton, H., Cant, L., ... & Matthews, C. (2009). Five-year predictive validity of DSM-IV conduct disorder research diagnosis in 4½–5-year-old children. *European Child & Adolescent Psychiatry*, *18*(5), 284–291.
[140] Patterson, G. R. (1976). The aggressive child: Victim and architect of a coercive system. *Behavior Modification and Families*, *1*, 267–316.
[141] Goodenough, F. L. (1931). *Anger in young children.* University of Minnesota Press.

Figure 34: Frequency of angry outbursts in boys and girls from 6 months to 7 years



These extremes reflected a trend that varied by children's age and gender. Both boys' and girls' angry outbursts hit a sharp peak when they were 18 months old and then declined steadily by the time they were 5 years old. However, girls' tantrums dropped off sharply by the time they were three, whereas boys' aggressive behaviour dissipated more slowly and remained more frequent throughout the duration of early childhood.

Goodenough's findings have been replicated many times in multiple large-scale studies.[142,143] The sudden onset of disruptive behaviour in the last half of children's second year is attributed to multiple factors, including their growing understanding of themselves as separate from others and that certain behaviours – including hitting and kicking – often get an immediate response from others. This knowledge, coupled with limited language and impulse control skills, results in toddlers quickly resorting to defiant behaviour in an attempt to assert themselves and get their way. Thus, the tantrums that take place during the 'terrible twos' are actually a necessary part of growing up.[144]

Over time, children learn how to manage and communicate their feelings effectively. However, this is easier for some children than it is for others. Factors influencing early aggression include children's temperament, language development, gender and the presence of young siblings.[145,146]

[142] Potegal, M., Kosorok, M. R., & Davidson, R. J. (1996). The time course of angry behavior in the temper tantrums of young children. *Annals of the New York Academy of Sciences*, *794*(1), 31–45.
[143] Patterson, G. R., Littman, R. A., & Bricker, W. (1967). Assertive behavior in children: A step toward a theory of aggression. *Monographs of the Society for Research in Child Development*, *32*(5), iii–43.
[144] Crockenberg, S., & Litman, C. (1990). Autonomy as competence in 2-year-olds: Maternal correlates of child defiance, compliance, and self-assertion. *Developmental Psychology, 26*, 961–971.
[145] Carbonneau, R., Boivin, M., Brendgen, M., Nagin, D., & Tremblay, R. E. (2015). Comorbid development of disruptive behaviors from age 1½ to 5 years in a population birth-cohort and association with school adjustment in first grade. *Journal of Abnormal Child Psychology*, *44*, 677–690.
[146] Dodge, K. A., & Pettit, G. S. (2003). A biopsychosocial model of the development of chronic conduct problems in adolescence. *Developmental Psychology, 39*(2), 349–371.

- Issues involving **temperament** include children's ability to manage frustration, their impulse control and the presence of 'bold and fearless' behaviours.[147,148,149] Bold and fearless behaviours, in particular, may be a predecessor to callous and unemotional (CU) traits in children as they grow older.[150,151] CU traits include a lack of empathy for others, reduced sensitivity to punishment, and a cruel and callous attitude. CU traits in early childhood are strongly associated with anti-social behaviour in adolescence and adulthood.[152]

- Factors pertaining to **language** include children's receptive and expressive language skills. For example, researchers have observed an inverse relationship between the size of children's vocabulary at age two and the length and intensity of their angry outbursts during their third year.[153,154] Developmental psychologists believe that language helps children to manage their impulses and feelings of frustration.[155] An understanding of the word 'no' in particular reduces the likelihood of aggressive behaviour and creates an opportunity for parent–child negotiation.[156]

- As Goodenough first observed, significant, but small **gender** differences in aggressive behaviours first become apparent in late toddlerhood. Prior to this stage, boys and girls are fairly similar in their expression of negative emotions. However, gender differences in aggression become increasingly pronounced throughout the remainder of childhood and early adolescence.[157] This difference appears to be related to differences in the rate of decline in aggressive behaviours between boys and girls.[158,159] This difference may be due to variations in the ways in which boys and girls are socialised and/or differences in the acquisition of early skills such as language and self-regulation.[160]

- The presence of **siblings**, particularly young siblings, increases the frequency of aggressive behaviour. This is partially because the presence of siblings creates additional opportunities for aggressive behaviours to occur. Thus it is not surprising that older siblings are often the recipient of an 18-month-old child's aggressive behaviour.[161]

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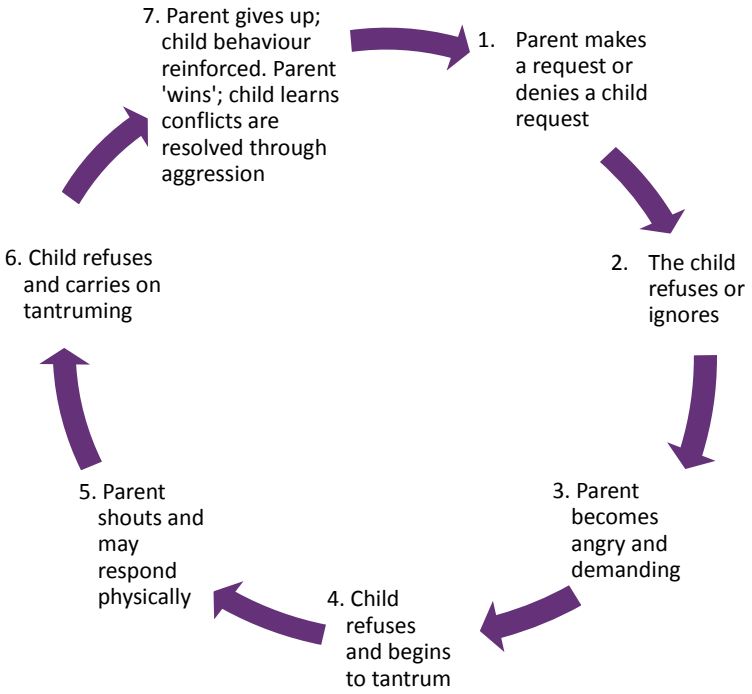
[147] Chess, S., & Thomas, A. (1977). Temperamental individuality from childhood to adolescence. *Journal of the American Academy of Child Psychiatry*, *16*(2), 218–226.
[148] Barker, E. D., Oliver, B. R., Viding, E., Salekin, R. T., & Maughan, B. (2011). The impact of prenatal maternal risk, fearless temperament and early parenting on adolescent callous-unemotional traits: A 14-year longitudinal investigation. *Journal of Child Psychology and Psychiatry*, *52*(8), 878–888.
[149] Frick, P. J., & Morris, A. S. (2004). Temperament and developmental pathways to conduct problems. *Journal of Clinical Child and Adolescent Psychology*, *33*(1), 54–68.
[150] Frick, P. J., & Viding, E. (2009). Antisocial behavior from a developmental psychopathology perspective. *Development and Psychopathology, 21*(4), 1111–1131.
[151] Hawes, D. J., Brennan, J., & Dadds, M. R. (2009). Cortisol, callous-unemotional traits, and pathways to antisocial behavior. *Current Opinion in Psychiatry*, *22*, 357–362.
[152] Frick, P. J., Blair, R. J., & Castellanos, F. X. (2013). Callous-unemotional traits and developmental pathways to the disruptive behavior disorders. In P. H. Tolan & B. L. Leventhal (Eds.), *Disruptive behavior disorders* (pp. 69–102). New York: Springer.
[153] Ayoub, C., Vallotton, C. D., & Mastergeorge, A. M. (2011). Developmental pathways to integrated social skills: The roles of parenting and early intervention. *Child Development, 82*, 585–600.
[154] Roben, C. K. P., Cole, P. M., & Armstrong, L. M. (2013). Longitudinal relations among language skills, anger expression, and regulatory strategies in early childhood. *Child Development, 84*, 891–905.
[155] Kopp, C. B. (1989). Regulation of distress and negative emotions: A developmental view. *Developmental Psychology*, *25*, 343–354.
[156] Kuczynski, L., Kochanska, G., Radke-Yarrow, M., & Girnius-Brown, O. (1987). A developmental interpretation of young children's noncompliance. *Developmental Psychology, 23*, 799–806.
[157] Chaplin, T. M., & Aldao, A. (2013). Gender differences in emotion expression in children: A meta-analytic review. *Psychological Bulletin*, *139*(4), 735–765.
[158] Parke, R. D., & Slaby, R. G. (1983). The development of aggression. In P. H. Mussen (Ed.), *Handbook of Child Psychology* (pp. 547–641). New York: Wiley.
[159] Keenan, K., & Shaw, D. (1997). Developmental and social influences on young girls' early problem behavior. *Psychological Bulletin*, *121*, 95–113.
[160] Hill, A. L., Degnan, K. A., Calkins, S. D., & Keane, S. P. (2006). Profiles of externalizing behavior problems for boys and girls across preschool: The roles of emotion regulation and inattention. *Developmental Psychology*, *42*, 913–928.
[161] Dunn, J., & Munn, P. (1985). Becoming a family member: Family conflict and the development of social understanding in the second year. *Child Development, 56*, 480–492.

Parenting behaviours, however, are consistently the strongest predictors of young children's behavioural difficulties.[162] Gerald Patterson and colleagues have observed that parents can inadvertently train their children to behave aggressively through ineffective responses that take place through 'coercive' parent–child interactions.[163] Coercive interactions typically begin with non-compliant child behaviours that demand or 'coerce' a negative or aggressive response from the parent.[164] The child will then respond negatively to the parent in turn and the cycle will continue until either the child or parent 'wins' (see Figure 35). In coercive interactions, a child 'win' typically means that the child has worn the parent down and got his or her way. A parent 'win' means that the child's negative behaviour has stopped, but the child will have nevertheless learned that conflicts are resolved through aggression.

Figure 35: Coercive interaction of parent–child conflict



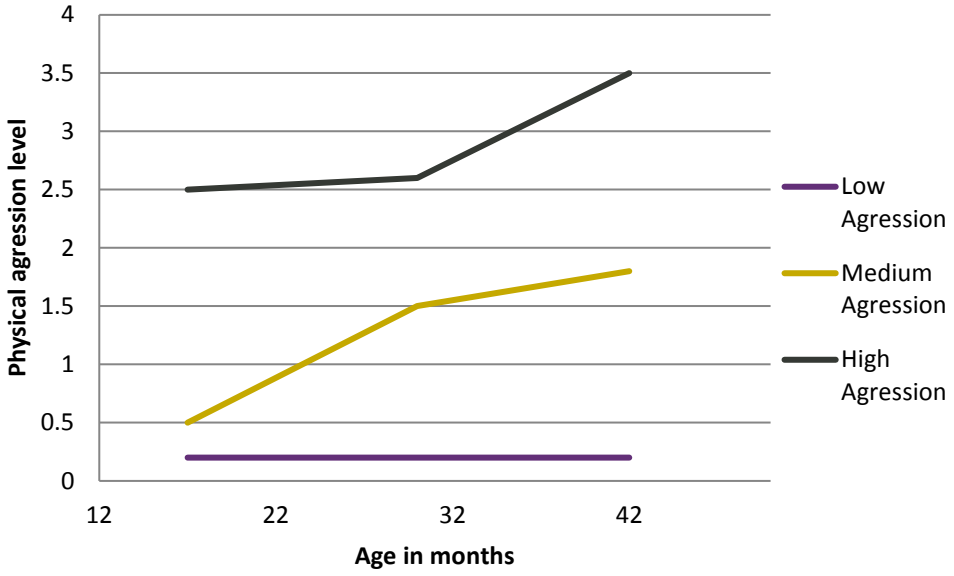
While all parents occasionally engage in these unproductive exchanges, parents of children with behavioural problems are more likely to initiate and persist in aggressive exchanges than those with more compliant children. Patterson and his colleagues have observed that the use of physical punishment is a particularly good predictor of child conduct disorders when children become older.[165] In these households, children learn quickly that 'might makes right' in resolving parent–child disputes and this learning may occur well before the tantruming stage begins.

Patterson's observations have been replicated and further articulated in many longitudinal studies. For example, Tremblay and colleagues have identified three trajectories of physical aggression (high, medium and low) that are already apparent at 17 months (see Figure 36). These patterns appear to be stable throughout early childhood and are predicted by mothers' aggressive behaviours when their infant was five months old. Specifically, mothers who reported shouting, shaking or smacking their infant were more likely to have a child

[162] Stormshak, E. A., Bierman, K. L., McMahon, R. J., & Lengua, L. J. (2000). Parenting practices and child disruptive behaviour problems in early elementary school. *Journal of Clinical and Child Psychology, 29*, 17–29.
[163] Patterson, G. R., Littman, R. A., & Bricker, W. (1967). Assertive behavior in children: A step toward a theory of aggression. *Monographs of the Society for Research in Child Development, 32,* iii–iv+1–43.
[164] Patterson, G. R. (1976). The aggressive child: Victim and architect of a coercive system. In L. A. Hamerlynck, L. C. Handy, & E. J. Mash (Eds.), *Behaviour Modification and Families*. New York, NY: Brunner-Mazell.
[165] Snyder, J., Cramer, A., Frank, J., & Patterson, G. R. (2015). The contributions of ineffective discipline and parental hostile attributions of child misbehaviour to the development of conduct problems at home and school. *Developmental Psychology, 41*, 30–41.

who displayed high levels of physical aggression one year later.[166] Tremblay's team has replicated these findings in multiple studies, observing that these patterns also predict children's aggressive behaviours once they enter school.[167]

Figure 36: Trajectories of physical aggression in young children



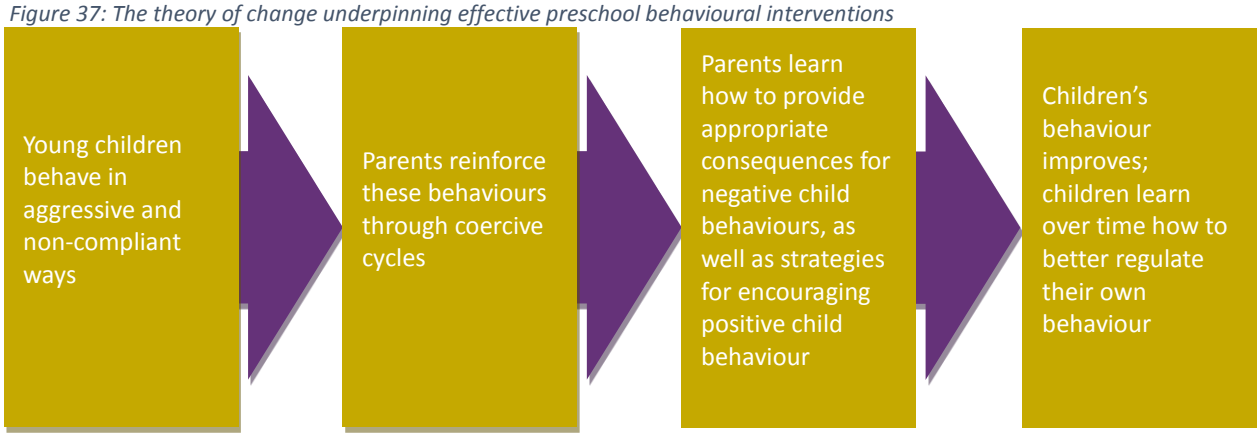
Behavioural difficulties identified in early childhood also predict a variety of other problems as children grow older.[168] These problems are costly in terms of both their societal impacts and their costs to the exchequer. Long-term problems consistently predicted by high levels of preschool aggression include antisocial and criminal activity in adolescence and adulthood; mental health problems; substance misuse; higher rates of hospitalisation and mortality; academic failure; greater unemployment; family breakdown; and intergenerational transmission of conduct problems to children. [169,170,171,172,173,174,175,176]

[166] Tremblay, R. E., Nagin, D. S., Seguin, J. R., Zoccolillo, M., Zelazo, P.D., Boivin, M., Perusse, D., & Japel, C. (2004). Physical aggression during early childhood: Trajectories and predictors. *Pediatrics, 114*, 43–50.
[167] Carbonneau, R., Boivin, M., Brendgen, M., Nagin, D., & Tremblay, R. E. (2015). Comorbid development of disruptive behaviors from age 1½ to 5 years in a population birth-cohort and association with school adjustment in first grade. *Journal of Abnormal Child Psychology*, *44*, 677–690.
[168] Nagin, D., & Tremblay, R. E. (1999). Trajectories of boys' physical aggression, opposition, and hyperactivity on the path to physically violent and nonviolent juvenile delinquency. *Child Development*, *70*, 1181–1196.
[169] Carey, G. (2000). Victims, victimology and victim impact statements. *Irish Criminal Law Journal*, *10*, 8–13.
[170] Dretzke, J., Frew, E., Davenport, C., Barlow, J., Stewart-Brown, S., Sandercock, J., et al. (2005). The effectiveness and cost effectiveness of parent training/education programmes for the treatment of conduct disorder, including oppositional defiant disorder, in children. *Health Technology Assessment, 9*, 1–250.
[171] Moffitt, T. E. (1993). Adolescence-limited and life course persistent antisocial behaviour: A developmental taxonomy. *Psychological Review, 100,* 674–701.
[172] Loeber, R., Burke, J., Lahey, B., Winters, A., & Zera, M. (2000). Oppositional defiant and conduct disorder: A review of the past 10 years, part 1. *Journal of the American Acadamy of Child and Adolescent Psychiatry*, *39*, 1468–1484.
[173] Burke, J., Loeber, R., & Birmaher, B. (2002). Oppositional defiant disorder and conduct disorder: A review of the past 10 years, part II. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(11), 1275–1293.
[174] Broidy, L. M., Nagin, D. S., Tremblay, R. E., Bates, J. E., Brame, B., Dodge, K. A., et al. (2003). Developmental trajectories of childhood disruptive behaviours and adolescent delinquency: A six site, cross-national study. *Developmental Psychology, 39*, 222–245.
[175] Farrington, D., & Welsh, B. C. (2007). Saving Children from a Life of Crime: Early Risk Factors and Effective Interventions. New York: Oxford University Press.
[176] Scott, S., Knapp, M., Henderson, J., & Maughan, B. (2001). Financial cost of social exclusion: Follow up study of antisocial children into adulthood. *BMJ, 323*(7306), 191.

Childhood aggression and early intervention

While the costs of antisocial behaviour are considerable, there is now growing evidence to suggest that some behavioural problems can be prevented through parenting interventions that minimise parents' use of verbal arguing and physical punishment (Figure 37).

Figure 37: The theory of change underpinning effective preschool behavioural interventions



These interventions teach parents age-appropriate, non-physical strategies for reinforcing children's positive behaviour and discouraging negative and aggressive behaviour. Effective strategies for improving children's behaviour and supporting their self-regulatory development include:

- Not giving in to children's temper tantrums and other coercive demands
- Not arguing with children or engaging in long periods of verbal negotiation
- Not using physical discipline as a form of punishment
- Using time out (and other age-appropriate sanctions) to discourage aggressive behaviour and calm children down
- Using a point system and other incentives for rewarding good behaviour
- Using verbal praise when children are behaving well.

While many parents are aware of these strategies and know how to use them, others do not know them, or may apply them incorrectly. Some parents also have difficulty implementing effective strategies because they either misinterpret the reasons for their child's aggressive behaviour, or they lack the confidence to follow through with effective discipline.[177,178]

Factors that influence parents' knowledge and use of these strategies include lower levels of educational attainment, substance misuse, single parenthood, social disadvantage and depression.[179,180,181] However, studies suggest that some of these parenting characteristics (particularly stress and depression) may actually be caused by the child's problematic behaviour.[182,183] For example, parents who lack positive parenting skills

[177] Sanders, M. R., & Woolley, M. L. (2005). The relationship between maternal self-efficacy and parenting practices: Implications for parent training. *Child: Care, Health and Development, 31,* 65–73.
[178] Dix, T., Ruble, D. N., & Zambarano, R. J. (1989). Mothers' implicit theories of discipline: Child effects, parent effects, and the attribution process. *Child Development, 60*, 1373–1391.
[179] Shaw, D. S., Vondra, J. I., Dowdell Hommerding, K., Keenan, K., & Dunn, M. (1994). Chronic family adversity and early child behaviour problems: A longitudinal study of low income families. *Journal of Child Psychology and Psychiatry, 35,* 1109–1122.
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[181] Hogan, D., Halpenny, A. M., & Greene, S. (2002). *Children's Experiences of Parental Separation*. Dublin: The Children's Research Centre, TCD.
[182] Patterson, G. R., & Yoerger, K. (2002). A developmental model for early- and late-onset delinquency. In J. B. Reid, G. R. Patterson, & J. J. Snyder (Eds.), *Antisocial Behaviour in Children and Adolescents: A Developmental Analysis and Model for Intervention* (pp. 147–172). Washington, DC: American Psychological Association.
[183] Long, C. E., Gurka, M. J., & Blackman, J. A. (2008). Family stress and children's language and behaviour problems. *Topics in Early Childhood Special Education*, *28*, 148–157.

may become increasingly permissive when trying to cope with their aggressive and defiant child. The child, in turn, will become more difficult to handle, which then further increases parental stress and lack of efficacy in managing their child's misbehaviour.[184,185]

Patterson and colleagues have observed that these cycles can be reversed through the use of effective strategies for managing child behaviour that are based on behaviour modification principles. Programmes that teach parents these strategies are collectively referred to as behavioural management training (BMT) programmes, because of their emphasis on managing the child's behaviour. Many of the more established BMT programmes are informed by the two-stage model first developed by Constance Hanf in the 1970s. Stage One provides parents with strategies for understanding their child's developmental needs and supporting child-directed play. Stage Two provides parents with advice and opportunities to practise age-appropriate praise and discipline.[186]

BMT programmes have been available since the late 1960s and have since undergone a great deal of rigorous evaluation, including multiple large-scale RCTs. Systematic reviews of these studies consistently suggest that BMT programmes are an effective method of reducing and preventing child behavioural problems, provided that they are implemented with fidelity (i.e. as they were intended).[187] Although the mechanisms of change within these programmes are not fully understood,[188] researchers investigating them consistently observe that changes in children's behaviour are best predicted by changes in specific parenting behaviours (e.g. age-appropriate discipline and praise) in comparison to changes in parents' mood or confidence.[189,190,191,192] Systematic reviews additionally suggest that interventions are most effective if they 1) provide parents with information that is relevant to the specific problems they are experiencing with their child and 2) provide parents with sufficient opportunities to practise new skills and receive individualised feedback from practitioners. Opportunities to practise new skills include role play, home work and group exercises.[193]

[184] Campbell, S. B. (1997). Behaviour problems in preschool children: Developmental and family issues. In T. H. Ollendick & R. J. Prinz (Eds.), *Advances in Clinical Child Psychology* (Vol. 9, pp. 1–26). New York: Plenum.
[185] Morawska, A., & Sanders, M. R. (2007). Concurrent predictors of dysfunctional parenting and maternal confidence: Implications for parenting interventions. *Child: Care, Health and Development*, *33*, 757–767.
[186] Reitman, D., & McMahon, R. J. (2013). Constance "Connie" Hanf (1917–2002): The mentor and the model. *Cognitive and Behavioural Practice, 20*, 106–116.
[187] Furlong, M., McGilloway, S., Bywater, T., Hutchings, J., Smith, S. M., & Donnelly, M. (2013). Behavioural and cognitive behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years. *Campbell Systematic Reviews, 12*.
[188] Weisz, J. R., & Kazdin, A. E. (2010). The present and future of evidence-based psychotherapies. In J. R. Weisz and A. E. Kazdin (Eds.), *Foundations of Child and Adolescent Research.* New York: The Guilford Press.
[189] Gardner, F., Hutchings, J., Bywater, T., & Whitaker, C. (2010). Who benefits and how does it work? Moderators and mediators of outcomes in a randomised trial of parenting interventions in multiple 'Sure Start' services. *Journal of Clinical Child and Adolescent Psychology, 39*, 568–580.
[190] Gardner, F., Connell, A., Trentacosta, C., Shaw, D., Dishion, T., & Wilson, M. (2009). Moderators of outcome in a brief family-centred intervention for preventing early problem behaviour. *Journal of Consulting and Clinical Psychology, 77*, 543–553.
[191] Hutchings, J., Bywater, T., Daley, D., Gardner, F., Whitaker, C., Jones, K., et al. (2007). Pragmatic randomised controlled trial of a parenting intervention in 'Sure Start' services for children at risk of developing conduct disorder. *British Medical Journal, 334*, 678–686.
[192] Taylor, T. K., & Biglan, A. (1998). Behavioural family interventions for improving child-rearing: A review of the literature for clinicians and policy makers. *Clinical Child and Family Psychology Review, 1*, 41–60.
[193] Kaminski, J. W., Valle, L. A., Filene, J. H., & Boyle, C. L. (2008). A meta-analytic review of components associated with parent training programme effectiveness. *Journal of Abnormal Child Psychology, 36*, 567–589.

How are parent management training programmes evaluated?

A primary goal of most BMT programmes is to improve children's behaviour through parents' increased use of effective behaviour management strategies. Hence, BMT programmes are typically evaluated through the use of validated assessments of parenting and child behaviours. Table 7 provides a list of some of the more frequently used measures by the programmes described in this report.

TABLE 7: MEASURES FREQUENTLY USED TO ASSESS CHANGES IN CHILDREN'S BEHAVIOUR AND PARENTING STRATEGIES

Child Measures	
Child Behavior Checklist (CBCL)	The Child Behavior Checklist (CBCL) is a widely used method of identifying problem behaviour in children. Problems are identified by a respondent who knows the child well, usually a parent or other caregiver. The first section consists of 20 questions about the child's competencies. The second section involves 120 questions about the child's emotional and behavioural problems during the last six months. The preschool checklist (CBCL/1½–5) is intended for use with children aged 18 months to 5 years.
Dyadic Parent-Child Interaction Coding System (DPICS)	The DPICS is a behavioural coding system that measures the quality of parent–child social interactions. It is used to monitor progress in parenting skills during treatment and provides an objective, well-validated measure of changes in child compliance after treatment.
Eyberg Child Behavior Inventory (ECBI)	The ECBI is a 36-item parent report instrument used to assess the current frequency and severity of disruptive behaviours to the home and school settings, as well as the extent to which parents and/or teachers find the behaviour troublesome. The measure distinguishes normal behaviour problems form conduct-disordered behaviour in children and adolescents aged 2 to 16.
Infant Toddler Social Emotional Assessment (ITSEA)[194]	The ITSEA is a 90 item parent report measures designed to assesses social or emotional problems in infants and toddlers. It provides a comprehensive profile of problems and competencies with scores on 4 domains: 1) Externalizing, 2) Internalizing, 3) Dysregulation, 4) Competence. The BITSEA is also available as a short form.
Parent Child Observation Task	The Parent-Child Observation Task involves four 5-minute tasks that aim to replicate a number of situations regularly occurring in daily family life. These tasks include: (a) child's game/free play, (b) a Lego task, (c) parent and child remained in the same room but completed separate activities, and (d) clean-up. Video-tapes of these sessions are then coded by trained researchers with a variety of coding schemes, including the Revised Family Observation Schedule, which considers negative and positive parent and child behaviour.

[194] Carter, A. S., Briggs-Gowan, M. J., Jones, S. M., & Little, T. D. (2003). The infant–toddler social and emotional assessment (ITSEA): Factor structure, reliability, and validity. *Journal of abnormal child psychology, 31*(5), 495-514.

Strengths and Difficulties Questionnaire (SDQ)	The Strengths and Difficulties Questionnaire (SDQ) is a behavioural screening instrument between the ages of 4 and 16. A preschool instrument is available for children between the ages of 3 and 4. Parents or teachers rate children on five different dimensions: emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and prosocial behaviour.
Vineland Adaptive Behavior Scales[195]	The Vineland Adaptive Behavior Scales is a measure the personal and social skills of individuals from birth through adulthood. They are completed by someone (often a parent, teacher) who has good knowledge of the child's behaviour in day-to-day activities.
Parenting Measures	
Alabama Parenting Questionnaire	A questionnaire measuring parenting practices shown to be associated with behavioural problems in children. The longer version has 42 items measuring five factors: positive parenting, poor monitoring, supervision, inconsistent parenting, parental involvement and the use of corporal punishment. There is also a nine-item short version.
Arnold Parenting Scale	The Parenting Scale is a 30-item questionnaire measuring three styles of dysfunctional parenting (over-reactivity, verbosity and laxness) thought to be independent of child behaviour.
Parenting Daily Hassles Scale	A 20-item scale developed to assess the frequency and intensity of 20 experiences that can be a hassle to parents.
Parenting Sense of Competence Scale	A 17-item scale which measures the satisfaction with the parenting role, reflecting the extent of parental frustration, anxiety and motivation and feelings of efficacy as a parent.
Parenting Stress Index (PSI)	The PSI measures both parent and child characteristics and qualities of the parent–child relationship. The full version consists of 101 questions and there is also a 36-item short version. Child dimensions include child distractibility/hyperactivity, adaptability, demandingness, etc. Parent dimensions include competence, social isolation, depression and relationship with the spouse.

The most rigorous assessments of parent and child behaviours make use of video-taped observations of child- and parent-directed interaction in a series of standardised tasks that can be video-taped in the home or laboratory. Systems for coding these observations include the Dyadic Parent-Child Interaction Coding System[196] and the Revised Family Observation Schedule.[197] Both systems code the quality of parents' use of praise and instruction and children's compliance during the task.

Children's behaviour is also assessed through validated measures of parent reports of children's behaviour. These assessments include the Strengths and Difficulties Questionnaire,[198] the Eyberg Child Behavior

[195] Sparrow, S. S., Cicchetti, D. V., & Balla, D. A. (1989). The Vineland Adaptive Behavior Scales. *Major psychological assessment instruments, 2,* 199-231.
[196] Eyberg, S. M., & Robinson, E. A. (1981). *Dyadic parent-child interaction coding system*. Seattle, WA: Parenting Clinic, University of Washington.
[197] Sanders, M. R., Waugh, L., Tully, L., & Hynes, K. (1996). *The Revised Family Observation Schedule* (3rd ed.). Brisbane: Parenting and Family Support Centre, The University of Queensland.
[198] Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, *38*(5), 581–586.

Inventory[199] and the Child Behavior Checklist.[200] Validated self-report instruments are also used to assess changes in parents' behaviours, parents' perceived efficacy as parents and parents' overall feelings of stress and well-being. Commonly used assessments include the Parenting Daily Hassles Scale,[201] the Parenting Sense of Competence Scale,[202] the Parenting Stress Index,[203] the Alabama Parenting Questionnaire[204] and the Arnold Parenting Scale.[205]

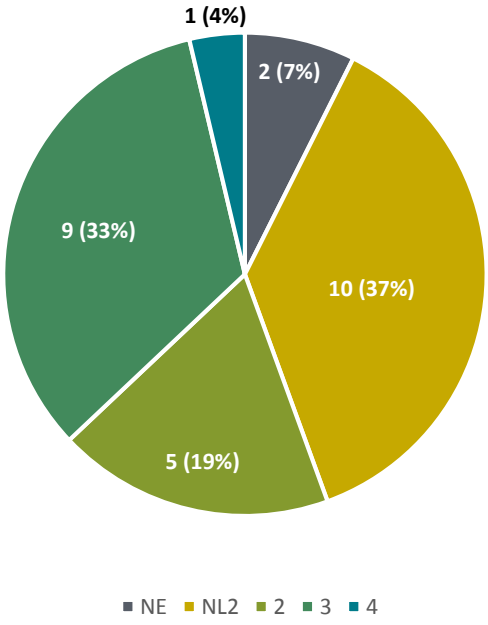
Findings

The literature review identified 27 interventions that aim to improve young children's behaviour through parenting support. The vast majority (95%) of these programmes' best evidence involves children who are age two or older. Figures 38 through 47 summarise these programmes in terms of the strength of their evidence, level of need, delivery model and cost.

Strength of evidence

Figure 38 summarises the distribution of the strength of evidence ratings for the 27 interventions that teach parents skills for managing their children's behaviour.

Figure 38: Behaviour programmes by level of evidence (n=27)



[199] Eyberg, S., Boggs, S. R., & Reynolds, L. A. (1980). *Eyberg child behavior inventory*. University of Oregon Health Sciences Center.
[200] Achenbach, T. M., & Rescorla, L. (2000). *Child behavior checklist*. Burlington, VT: University of Vermont Department of Psychiatry.
[201] Crnic, K. A., & Greenberg, M. T. (1990). Minor parenting stresses with young children. *Child Development*, *61*(5), 1628–1637.
[202] Ohan, J. L., Leung, D. W., & Johnston, C. (2000). The Parenting Sense of Competence scale: Evidence of a stable factor structure and validity. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, *32*(4), 251–261.
[203] Abidin, R. R. (1990). *Parenting Stress Index (PSI)*. Charlottesville, VA: Pediatric Psychology Press.
[204] Essau, C. A., Sasagawa, S., & Frick, P. J. (2006). Psychometric properties of the Alabama parenting questionnaire. *Journal of Child and Family Studies*, *15*(5), 595–614.
[205] Arnold, D. S., O'Leary, S. G., Wolff, L. S., & Acker, M. M. (1993). The Parenting Scale: A measure of dysfunctional parenting in discipline situations. *Psychological Assessment*, *5*(2), 137–144.

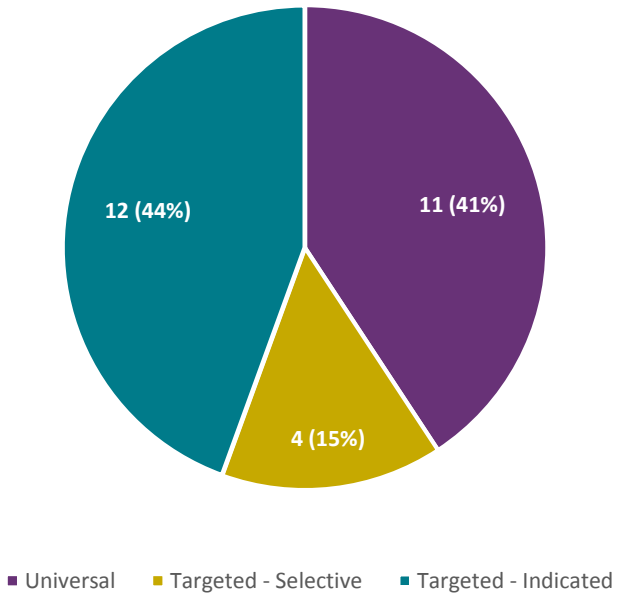
- One (4%) intervention (Incredible Years Preschool) has Level 4+, meaning that it has evidence from over three RCTs demonstrating short-term improvements in children's behaviour. One of these studies additionally suggests that these benefits are maintained for ten years or longer
- 9 (33%) have Level 3 or 3+ evidence from at least one rigorously conducted RCT
- 5 (19%) have preliminary evidence from a well-conducted pre/post or comparison group study
- 10 (37%) do not yet have evidence meeting the Level 2 threshold (NL2)
- 2 (7%) have evidence from a single well-conducted RCT suggesting no effect on any measured child outcome.

These findings suggest that just over a third (10 or 37%) of the interventions identified in the review could be considered 'evidence-based', i.e. having Level 3 evidence from at least one rigorously conducted RCT/QED. All of these Level 3 programmes could also be described as BMTs, meaning that they teach parents age-appropriate strategies for encouraging positive child behaviour and reducing coercive family interactions. At least six of these programmes make use of the two-stage intervention model developed by Constance Hanf. The details of all Level 2, 3 and 4 programmes are provided on our website.

Distribution of behaviour programmes by level of need

Figure 39 provides an overview of the distribution of programmes in terms of the level of need they aim to address.

Figure 39: Behaviour programmes by level of need classification (n=27)

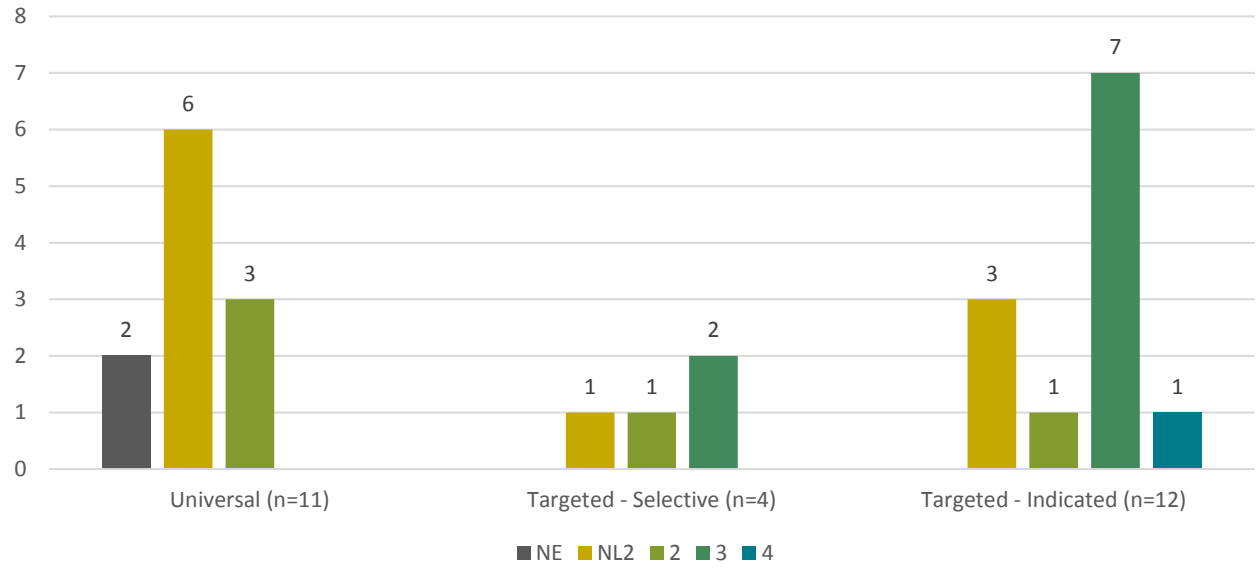


- 12 (44%) are provided as Targeted-Indicated interventions to parents where there is an identified behavioural problem
- 4 (15%) are offered as Targeted-Selective interventions, where there are risks associated with child behavioural problems

- 11 (41%) are offered as Universal programmes that are available to all families.

Figure 40 summarises the distribution of evidence within each level of need.

Figure 40: Distribution of evidence within level of need categories for behaviour programmes (n=27)

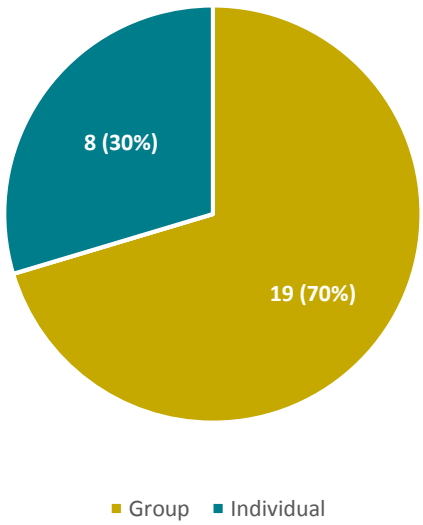


As Figure 40 suggests, a greater proportion of Targeted-Indicated interventions are underpinned by Level 3 evidence (7) in comparison to two that are offered as Targeted-Selective interventions.

Distribution of behaviour programmes by delivery model

Figure 41 summarises the distribution of behaviour programmes by delivery model.

Figure 41: Behaviour programmes by delivery model (n=27)



As Figure 41 suggests, the vast majority (19; 70%) of BMT programmes are delivered to groups of parents. The remainder are delivered to parents individually.

Figure 42 summarises the distribution of evidence within the delivery model types, suggesting that there are evidence-based models available as group-based or individual programmes.

Figure 42: Distribution of evidence within delivery model for behaviour programmes (n=27)

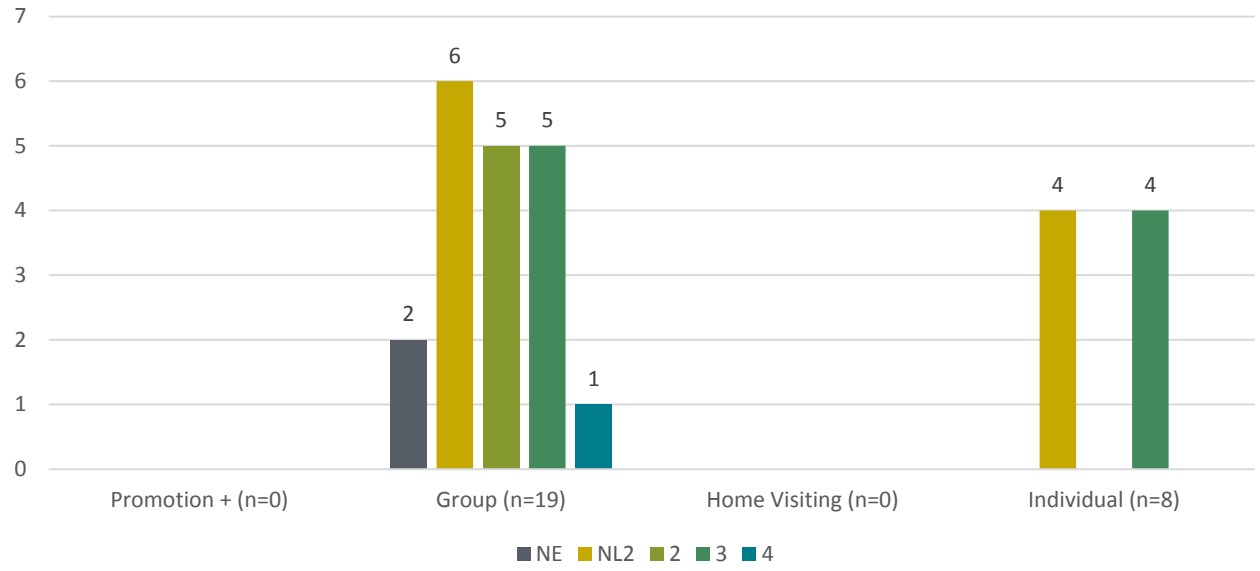
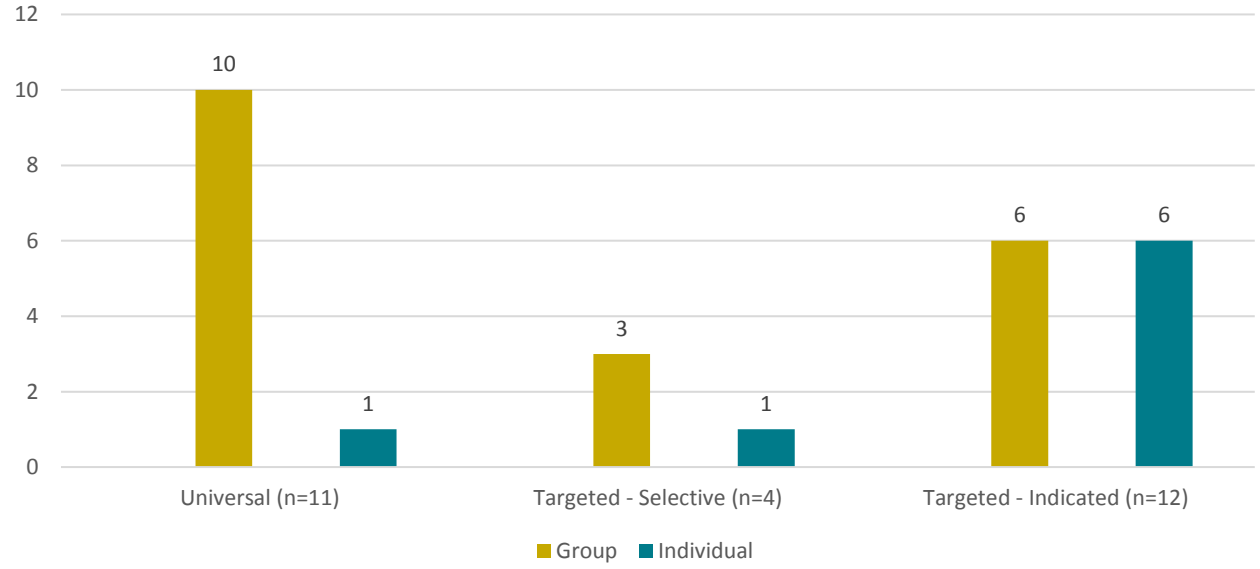


Figure 43 considers the distribution of child behaviour delivery models within each level of need. The figure suggests that group and individual programmes are available as Universal, Targeted-Selective and Targeted-Indicated interventions.

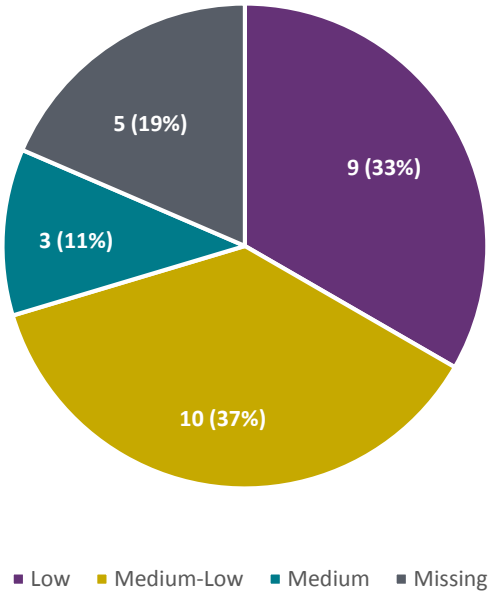
Figure 43: Distribution of delivery models within level of need categories for behaviour programmes (n=27)



Distribution of behaviour programmes by cost

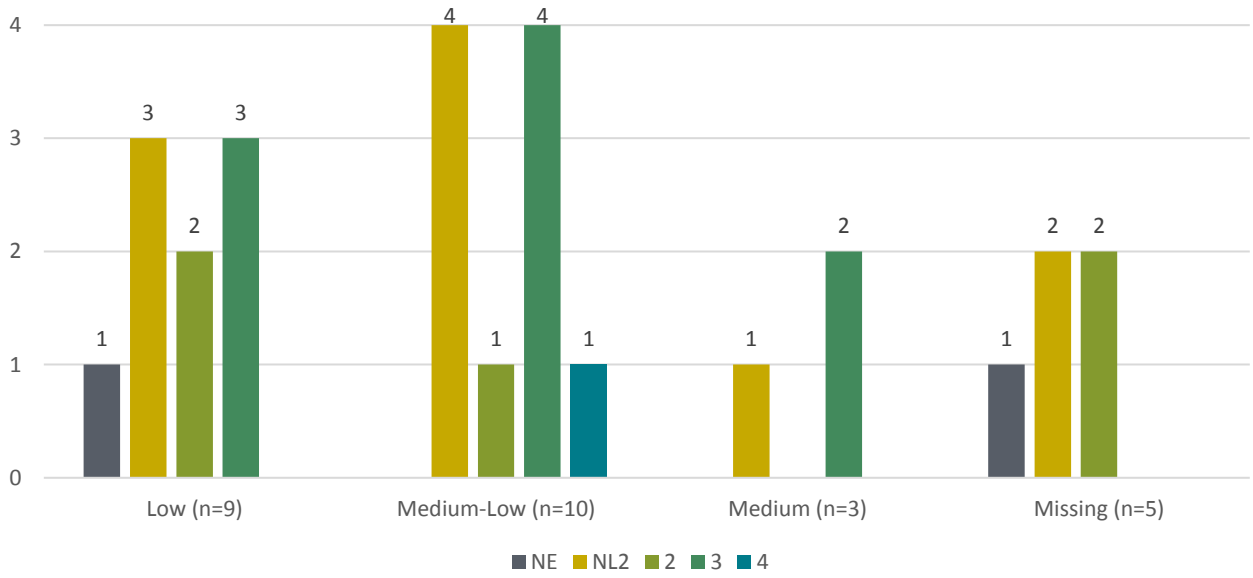
Figure 44 summarises the distribution of costs within the group of programmes that aim to improve children's behaviour.

Figure 44: Behaviour programmes by cost rating (n=27)



As Figure 45 suggests, many of these low-cost programmes are also evidence-based. Three of the Level 3 programmes received a cost rating of 1, meaning that they were low cost. Five evidence-based programmes (4 at Level 3, 1 at Level 4) received a rating of 2, meaning that they were low-medium cost and two Level 3 programmes were medium cost.

Figure 45: Distribution of evidence within cost rating categories for behaviour programmes (n=27)



The lower cost of behavioural programmes is related to the fact that the majority of them are delivered to groups of parents, as Figure 46 suggests. In fact, there were no Home Visiting or Promotion+/short-duration programmes that primarily addressed children's behaviour.

Figure 46: Distribution of delivery model within cost rating categories for behaviour programmes (n=27)

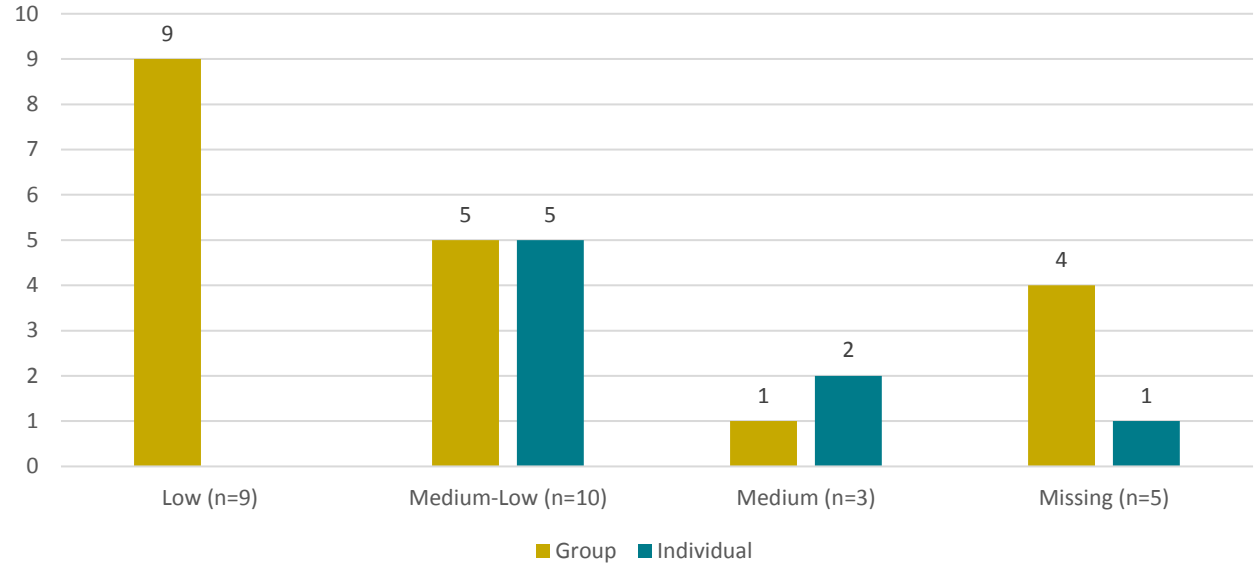
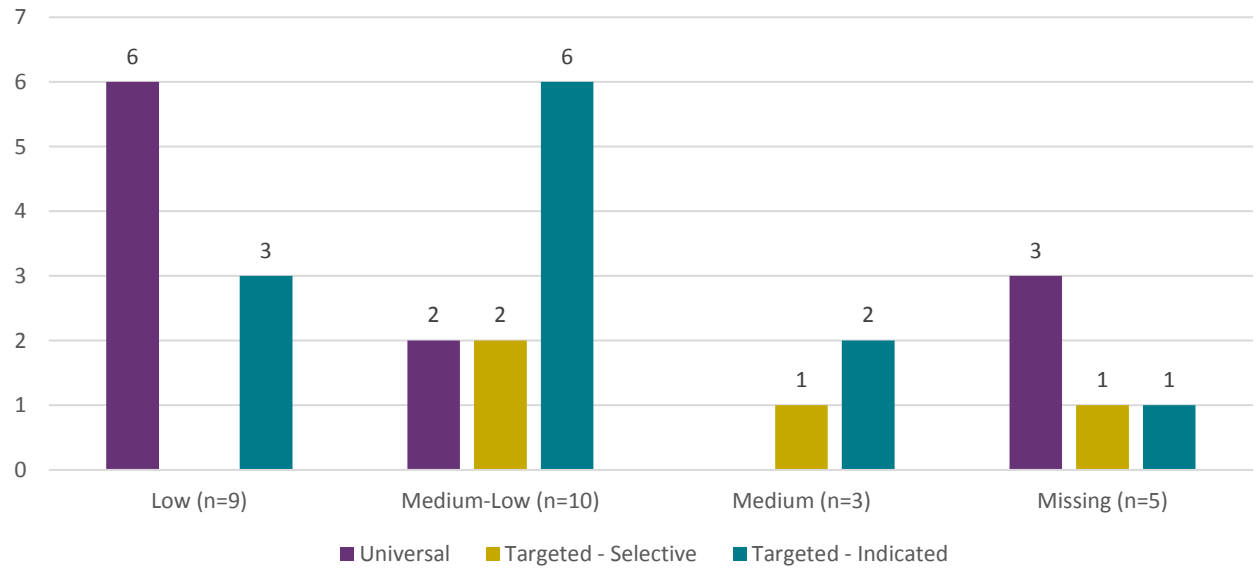


Figure 47 shows that many of the lower-cost programmes are nevertheless available for families with higher levels of need. In the following section, we provide case examples describing some of these programmes that also have good or established evidence of being effective.

Figure 47: Distribution of level of need within cost rating categories for behaviour programmes (n=27)



Discussion of the aggregate findings

The EIF evidence panel assessed ten BMT programmes to be evidence-based, representing over a third (37%) of the programmes aiming to improve children's behaviour. The majority of these programmes are Targeted-Indicated interventions (8) in comparison to Targeted-Selective or Universal interventions. Six of these programmes are offered as group-based interventions and four are offered as individual therapy. It is also noteworthy that these programmes' best evidence involves children who are aged two or older. This is consistent with observational research evidence suggesting that behavioural problems are not in evidence until the age of 2.5 or 3.

The findings reported here also suggest that there are proportionally more evidence-based (Level 3 or higher) programmes (37%) addressing children's behavioural problems, in comparison to evidence-based attachment interventions (5 or 18%) or learning interventions (2 or 10%). This is likely because behavioural programmes were first developed in the 1960s and 1970s and have since undergone a great deal of evaluation and refinement. This may also be because many programmes have been developed within the field of mental health, which has a tradition of using rigorous evaluation to develop programmes.

The greater availability of evidence-based behaviour programmes may also have to do with the fact that they promote principles that are easier for parents to understand and implement effectively, resulting in changes that are rapid and easy to measure.[206] The fact that a higher proportion of BMT programmes are available as Targeted-Indicated interventions may also contribute to their effectiveness, since they are offered to families experiencing serious difficulties with their child's behaviour and may provide more benefits that are easier to detect and measure.

Interestingly, behaviour programmes have by and large relatively low cost to implement. In fact, there were no behaviour programmes involving medium-high to high costs. This is because the majority of them are offered to groups of parents and are of relatively short duration in comparison to attachment-based programmes and programmes addressing children's early learning. We address this point again at the end of this chapter and in the conclusion of the report.

Evidence-based behaviour programmes

Table 8 provides a list of the interventions identified in the literature review with evidence from one or more RCTs/QEDs. While 10 interventions could be described as evidence-based, only 1 intervention, Incredible Years Preschool BASIC, had evidence from multiple RCTs, with one observing child benefits persisting for ten years or longer. The details of IY Preschool BASIC, as well as several other programmes, are described below to exemplify key points about the 10 evidence-based programmes more generally.

[206] Gardner, F., Montgomery, P., & Knerr, W. (2015). Transporting evidence-based parenting programs for child problem behaviour (age 3 – 10) between countries: Systematic review and meta-analysis. *Journal of Clinical Child and Adolescent Psychology,* 1–14.

TABLE 8: CHARACTERISTICS OF EVIDENCE-BASED INTERVENTIONS BY LEVEL OF EVIDENCE, NEED AND DELIVERY MODEL

Programme name	Strength of evidence	Level of need (best evidence)	Delivery model	Children's age (best evidence)
Incredible Years Preschool BASIC	4+	Targeted-Indicated	Group	Preschool
Family Check-up	3+	Targeted-Selective	Individual	Toddlerhood
ParentCorps	3	Targeted-Selective	Group	Preschool
The New Forest Parenting Programme	3+	Targeted-Indicated	Individual	Preschool
Hitkashrut	3	Targeted-Indicated	Group	Preschool
Triple P Group	3+	Targeted-Indicated	Group	Preschool
Triple P Standard	3	Targeted-Indicated	Individual	Preschool
Triple P Discussion Groups	3+	Targeted-Indicated	Group	Preschool
Empowering Parents/Empowering Communities	3	Targeted-Indicated	Group	Preschool
Helping the non-compliant child	3	Targeted-Indicated	Individual	Preschool

Level 4 or 4+

Incredible Years Preschool BASIC

The Incredible Years (IY) Preschool BASIC Programme is presented as a case example because it has consistent evidence of improving child primary outcomes from 14 RCTs. Three of these studies were conducted in England and Wales.[207,208,209] IY Preschool BASIC was originally rolled out nationally through the National Academy for Parenting Practitioners between 2007 and 2010. Implementation support is currently available through the Improving Access to the Psychological Therapies (IAPT) programme. A summary of IY Preschool BASIC is provided in Box A. A complete description of the programme's implementation requirements and evidence is provided on the EIF website.

IY Preschool BASIC is for parents with concerns about managing the behaviour of a child between the ages of three and six. Parents attend 18 to 20 weekly group sessions where they learn strategies for interacting and communicating positively with their child, promoting optimal social and emotional development and discouraging unwanted child behaviour. Two facilitators (QCF Level 4/5) lead parents in weekly two-hour group

[207] Hutchings, J., Bywater, T., Daley, D., Gardner, F., Whitaker, C., Jones, K., Eames, C., and Edwards, R.T., (2007). Parenting intervention in Sure Start services for children at risk of developing conduct disorder: pragmatic randomised controlled trial. *BMJ, 334,* doi:10.1136/bmj.39126.620799.55

[208] Scott, S., Spender, Q., Doolan, M., Jacobs, B., and Aspland, H. (2001). Multicentre controlled trial of parenting groups for childhood antisocial behaviour in clinical practice. *BMJ, 323,* 1 – 7.

[209] Gardner, F., Burton, J., and Klimes, I. (2006). Randomised controlled trial of a parenting intervention in the voluntary sector for reducing child conduct problems: outcomes and mechanisms of change. *Journal of Consulting and Clinical Psychology, 47,* 1123 – 1132.

discussions of mediated video vignettes, problem solving exercises and structured practice activities addressing parents' personal goals for themselves and their children.

The Incredible Years format is informed by Constance Hanf's two stage model, where parents work their way up the Incredible Years™'Parenting Pyramid™', learning first how to be a responsive, attentive and nurturing parent who is able to support their child's social, emotional and cognitive development through child directed play, coaching methods, age appropriate praise, and predictable family routines. During the remaining sessions, parents learn strategies for limit setting and managing unwanted child behaviour in a calm, consistent and respectful manner. The BASIC programme can be followed by the 12 week ADVANCED component, if families have more complex needs. Advanced sessions cover anger and depression management as well as effective communication and problem solving strategies.

A primary aim of the IY model is to increase parents' perception of their own efficacy as a parent as well as to promote positive attachment with their children. The providers note that this aim is different from improving parents' confidence more generally. This is accomplished by providing parents with many opportunities to practice new skills, develop more positive cognitions and attributions, build support networks with other parents and receive feedback from the two group co-facilitators. These opportunities include role play practices, home activities and readings, and group problem-solving discussions. Some group interventions additionally include individual support to parents through weekly phone calls or emails, or home coaching sessions with children that take place independently of the group sessions.

IY Preschool BASIC has evidence of being effective if delivered at the Universal, Targeted-Selective and Targeted-Indicated level. However, its' impact appears to be greater when offered as a Targeted-Indicated programme. This is clear in the follow-up findings from the 2001 randomised controlled treatment trial (conducted in South London and East Sussex), which observed sustained benefits lasting ten years or longer for children whose parents attended IY Preschool BASIC as a Targeted-Indicated programme.[210] Families were thus only offered the programme if their preschool child had a clinical diagnosis of a behavioural problem. The ten year follow-up study observed reduced antisocial behaviour and improved reading ability amongst IY children in comparison to those whose parents who did not receive the intervention. The study also observed higher levels of warmth and supervision amongst IY parents.

Long-term outcomes were not, however observed amongst parents attending IY at the Targeted-Selective level. While these children were at risk of developing a behavioural problem on the basis of community demographics (they were all living in a deprived community in south London), the children did not have a diagnosed behavioural problem.[211] While this study also observed significant short-term improvements in IY children's behaviour, these benefits were smaller in magnitude (i.e. the effect size for Targeted-Selective participants was .6 compared to 1.1 for the Targeted-Indicated group) and subsequently not sustained in the ten year follow-up.

The authors concluded that "early intervention with severely antisocial children for whom treatment is indicated may prevent the development of antisocial personality in adolescence and may improve academic performance. In contrast, early intervention with selective high-risk samples may be ineffective" (p. 649).[212]

[210] Scott, S., Briskman, J., & O'Connor, T. G. (2014). Early prevention of antisocial personality: long-term follow-up of two randomized controlled trials comparing indicated and selective approaches. *American Journal of Psychiatry*, *171*(6), 649-657.
[211] Scott S, Spender Q, Doolan M, Jacobs B, Aspland H (2001) Multicentre controlled trial of parenting groups for childhood antisocial behaviour in clinical practice. *BMJ, 323*, 194–198.
[212] Scott, S., Briskman, J., & O'Connor, T. G. (2014). Early prevention of antisocial personality: long-term follow-up of two randomized controlled trials comparing indicated and selective approaches. *American Journal of Psychiatry*, *171*(6), 649-657.

The authors attribute the lack of long-term benefits for the Targeted –Selective sample to the smaller effect-size observed at the end for the programme, as well as the relative lack of motivation of the parents in the Targeted-Selective group. Specifically, the authors reported that the parents participating in the Targeted-Selective programme attended fewer sessions in comparison to those participating Targeted-Indicated intervention. The authors conclude that in this case this occurred because the Targeted-Selective parents did not perceive a need for the intervention and therefore attended fewer sessions. This resulted in the strategies not being learned sufficiently so that their impact on parenting practices would be maintained over time.

Box A: The Incredible Years Preschool BASIC Programme

Strength of evidence rating: 4+ **Cost rating:** 2

Most consistent child impacts: Reduced levels of defiant behaviour; increased prosocial behaviour; improved reading skills.

Most consistent parent impacts: Increased positive parenting; reduced negative parenting; warmer expressed emotion; reduced stress; reduced depression; greater parenting efficacy

Target population: Parents with concerns about their child	**Child's age:** Three to six	**Level of need:** Targeted-Indicated
Type of programme Group	**Setting(s)** Community venues	**Who can deliver it?** Lead Practitioner: QCF Level 7/8 helping profession Co-lead Practitioner: QCF Level 7/8 in a helping profession
Country of origin: USA	**Where implemented?** UK , USA and internationally	**Where evaluated?** USA, UK, Internationally

Programme description: The Incredible Years (IY) Preschool Basic Programme is for parents with concerns about the behaviour of a child between the ages of three and six. Parents attend 18 to 20 weekly group sessions where they learn strategies for interacting positively with their child and discouraging unwanted behaviour. Two facilitators (QCF Level 7/8) lead parents in weekly 2-hour group discussions of mediated video vignettes, problem solving exercises and structured practice activities addressing parents' personal goals. During the sessions, parents practice child-directed play skills that build positive relationships and attachment; strengthen more nurturing parenting using social, emotion and persistence coaching methods; encourage school readiness skills and beginning problem solving skills; establish predictable routines and rules; provide incentives for positive behaviour and reduce behaviour problems. Parental social support is strengthened by weekly facilitator calls, parent buddy calls and group process methods. IY Preschool Basic can be combined with Incredible Years Advanced for families with more complex issues. Advanced is a ten to 12 week add-on component that covers anger and depression management, building support networks, effective problem-solving for couples and with teachers and family meetings.

Incredible Years BASIC: Cost and Impact

Incredible Years Preschool BASIC is a **low-medium cost** programme with a cost rating of 2. Factors that contributed to this rating include its group-based delivery format, its medium duration and training supervision requirements for its two co-facilitators. These requirements include a recommended certification process by

which certified IY mentors review videotapes of practitioners delivering the programme. Estimates from Investing in Children[213] suggest that a relatively modest investment in the programme at £1,211 could yield a return of £1,654, yielding a benefit cost ratio of 1.37.

IY Preschool BASIC programme has evidence from more than 14 RCTs conducted in multiple countries. All of these studies have observed consistent short term improvements in children's internalising and externalising behaviours. Findings from the three UK trials observed improvements in children's behaviour with effect sizes ranging from .32 to 1.05, as well as improvements in parenting practices (effect sizes ranging from .65 - .79), reductions in parenting stress (effect sizes around .80) and reductions in parental symptoms of depression (effect sizes .30 - .55).

Level 3 or 3+:

Triple P

The Triple P Group programme is presented as a case example because it is in widespread use throughout the UK and its evidence further underscores the increased efficacy of BMT programmes when offered at the Targeted-Indicated level. It should be noted that Triple P Group is one of 20 interventions developed as part of the suite of Triple P programmes. These programmes range in intensity from media and communication activities (Triple P Level 1 programmes) to highly intensive interventions that are delivered to families where there are child protection concerns (Triple P Level 5 programmes).[214] We recognize that separate evaluation evidence exists for each of the individual Triple P programmes, as well as for the Triple P suite as a whole[215]. However, as described in Chapter 2, we have chosen to focus this review on the questions of what works for whom, by assessing the evidence for specific programmes based on the evidence of its effectiveness for specific ages of children (up to age 5 years), at specific levels of need and aiming to improve one of the three domains of development. Therefore we have assessed each specific Triple P programme as a separate activity.

Triple P Group was first trialled as a universal prevention intervention for preschool aged children but has been most commonly used as a Targeted-Indicated (Level 4 in the Triple P Suite) intervention for parents with a child between 0 and 12 years old who have serious concerns about their child's behaviour.[216] The Triple P Group format provides parents with up to 17 different strategies for improving their child's behaviour over a period of 8 weeks, starting with strategies that encourage positive child behaviour and ending with methods for addressing aggressive and negative child behaviour. The programme is delivered to groups of parents through five two-hour sessions that are augmented with at least three individual telephone calls with the Triple P practitioner. A summary of Triple P Group is provided in Box B and its evidence and implementation requirements are provided in the Programme Reports on the EIF website.

[213] Investing in Children: Incredible years parenting programme. Available at: http://investinginchildren.eu/interventions/incredible-years-parent-training

[214] Sanders, M. R. (2012). Development, evaluation, and multinational dissemination of the Triple P-Positive Parenting Program. Annual Review of Clinical Psychology, 8, 1–35, http://dx.doi.org/10.1146/annurev-clinpsy-032511-143104

[215] Sanders, M. R., Kirby, J. N., Tellegen, C. L., & Day, J. J. (2014). The Triple P-Positive Parenting Program: A systematic review and meta-analysis of a multi-level system of parenting support. Clinical Psychology Review, 34(4), 337–357. http://dx.doi.org/10.1016/j.cpr.2014.04.003

[216] Bor, W., Sanders, M. R., & Markie-Dadds, C. (2002). The effects of the Triple P-Positive Parenting Program on preschool children with co-occurring disruptive behavior and attentional/hyperactive difficulties. *Journal of abnormal child psychology, 30*(6), 571-587.

The German government funded a trial of Group Triple P as a Universal programme for parents with a preschool child.[217] Findings from a four-year RCT observed improvements in parent reports of their own and their children's behaviour at the two-year assessment. Improvements in parents' behaviour were maintained at the four year assessment, but there were no longer significant differences between the behaviours of the Triple P Group and comparison group children.[218,219] The authors observed that while the improvements in Triple P children's behaviour were maintained, there were also similar improvements in the behaviour of the control group. The authors concluded at the time the "results support the long-term efficacy of the Triple P-group programme as a universal prevention intervention for changing parenting behaviour while there was little evidence for maintenance of change in behaviour problems" (p. 233).

Box B: Triple P Group

Strength of evidence rating: 3+ **Cost rating:** 1

Most consistent child impacts: improved behaviour, reduced emotional problems

Most consistent parent impacts: improved parenting; increased parental self-efficacy; improved relationship satisfaction

Target population: Parents with concerns about their child	**Child's age:** 0 - 12	**Level of need:** Targeted-Indicated
Type of programme Group	**Setting(s)** Community venues	**Who can deliver it?** Lead Practitioner: QCF Level 4/5 helping profession
Country of origin: Australia	**Where implemented?** UK, Australia, USA and internationally	**Where evaluated?** Australia, USA, Internationally

Programme description: Group Triple P is an indicated intervention for parents with a child between 0 and 12 years old who have concerns about their child's behaviour. Groups of up to 12 parents attend sessions over eight weeks delivered by a single trained and supervised clinical psychologist. These sessions include five two-hour group meetings, as well as three (15 to 30 minute) individual telephone consultations. Parents learn up to 17 different strategies for improving their children's competencies and discouraging unwanted child behaviour. Role play, homework exercises and discussions involving video-taped examples of effective parenting strategies are used to help parents learn methods for dealing with unwanted child behaviour and supporting their child's emotional needs.

It is worth noting, however, that recent follow-up of the Triple P participants in the German trial suggest that many of behavioural differences were maintained in comparison to a sample of children who did not

[217] Hahlweg K, Heinrichs N, Kuschel A, Feldmann M (2008). Therapist assisted self-administered bibliotherapy to enhance parental competence: Short and long-term effects. *Behaviour Modification, 32*, 659-681.

[218] Hahlweg, K., Heinrichs, N., Kuschel, A., Bertram, H., & Naumann, S. (2010). Long-term outcome of a randomized controlled universal prevention trial through a positive parenting program: Is it worth the effort?. *Child and Adolescent Psychiatry and Mental Health*, *4*(1), 1.

[219] Heinrichs, N., Kliem, S., & Hahlweg, K. (2014). Four-year follow-up of a randomized controlled trial of Triple P Group for parent and child outcomes.*Prevention Science*, *15*(2), 233-245.

participate in Triple P[220]. While this comparison sample is different than the control group involved in the original trial, the findings suggest a potential preventive effect for child behaviour problems of Triple P Group linked to permanent changes in the parents' behaviour.

Triple P Group: Cost and Impact

Group Triple P is delivered in five sessions of approximately one to two hours duration to groups of up to 12 families. An additional three sessions (between 15 and 30 minutes each) are delivered to individual families. The programme is delivered by one Triple P Practitioner with QCF 4/5 qualifications, who has received 3 days of programme training and completed a ½ day competency based accreditation process. It is recommended that practitioners are supervised by a supervisor with a QCF 7/8 level qualification. There is currently no booster training requirement for practitioners, and there is no licensing requirement to run the programme.

Together, these programme inputs suggest that this programme is relatively low cost to deliver with an EIF cost rating of 1. It should be noted, however, that Investing in Children[221] has estimated the unit cost of Triple P Group as £1,129. The discrepancy between these estimates results from the fact that the Investing in Children estimate is based on a singular application in Birmingham in which there was very intensive training of practitioners but little uptake in practice leading to a very high unit cost in that estimate. Cost estimates from the Washington State Institute of Public Policy in the US[222], and Triple P's own work with five statutory and voluntary providers in the UK, indicate costs in line with the EIF cost rating of 1. As we have explained in Annex 3 the EIF cost rating is estimated based on information from providers about the input requirements of the programme in its general or typical form. We have not independently verified these specifications. In practice the specific requirements of implementation in different contexts may vary substantially and so interested commissioners should test costs directly with providers.

When offered as a Targeted-Indicated programme, Triple P has evidence of improving parenting practices and child behavioural problems from two Level 3 studies.[223,224] For this reason, Triple P Group was assessed as having 3+ evidence, if offered as a Targeted-Indicated intervention. Both of these studies observed positive impacts on a number of child and parent outcomes. One of the studies additionally found improvements in a number of parenting behaviours, couple satisfaction and feelings of parenting efficacy. However, neither study tested whether these effects were sustained beyond a year.

Empowering Parents/Empowering Communities (EPEC)

EPEC is a Targeted-Indicated intervention for families with a child between the ages of 2 and 11 living in disadvantaged communities. It is described here as a case example because it is a manualised programme developed in the UK that is delivered by trained parents who are former programme participants, supervised and quality assured by experienced child mental health and parenting practitioners. The programme is designed to increase access to effective parenting support to improve specific child and family outcomes. Parents attend eight weekly two-hour sessions where they learn strategies for improving the quality of their interactions with their child, reducing negative child behaviour and increasing their efficacy and confidence as parents. EPEC's details are summarised in Box C and provided in full on the EIF website.

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[220] Hahlweg, K., Haninghofer, J., Propp, O., Hosser, D., Schulz, W. & Zimmerman, T. (2015). *Ten Year Follow-up of a Randomized-controlled Trial of Group Triple P.* Paper presented at the Helping Families Change Conference, Amsterdam, The Netherlands.

[221] Investing in Children: Group Triple P. Available at: http://investinginchildren.eu/interventions/triple-p-positive-parenting-programme-level-4-group

[222] Washington State Institute of Public Health (WSIPP) Triple P Level 4 Group cost benefit (revised 2016). http://www.wsipp.wa.gov/BenefitCost/ProgramPdf/81/Triple-P-Positive-Parenting-Program-Level-4-group

[223] Leung, C., Sanders, M. R., Leung, S., Mak, R., & Lau, J. (2003). An outcome evaluation of the implementation of the Triple P-Positive Parenting Program in Hong Kong. *Family Process, 42*(4), 531-544.

[224] Chung, S., Leung, C., & Sanders, M. (2015). The Triple P–Positive Parenting Programme: the effectiveness of group Triple P and brief parent discussion group in school settings in Hong Kong. *Journal of Children's Services, 10(4),* 339-352.

Box C: Empowering Parents/Empowering Communities (EPEC)

Strength of evidence rating: 3 **Cost rating:** 1

Most consistent child impacts: Improved behaviour

Most consistent parent impacts: Improved parenting

Target population: Parents with concerns about their child	**Child's age:** 2 to 11	**Level of need:** Targeted-Indicated
Type of programme: Group	**Setting(s):** Community venues	**Who can deliver it?** Lead Practitioner: QCF Level 3 Parent facilitator supported by CAMHS team
Country of origin: UK	**Where implemented?** UK	**Where evaluated?** UK

Programme description: EPEC is for disadvantaged families experiencing behavioural difficulties with a child between the ages of 2 and 11. Parents attend eight weekly two-hour sessions facilitated by pairs of trained and supervised peer facilitators. During these sessions, parents learn strategies for improving the quality of their interactions with their child, reducing negative child behaviour and increasing their efficacy and confidence in parenting. The sessions involve group discussions, demonstrations, role play and homework assignments.

Empowering Parents/Empowering Communities: cost and impact

EPEC received is a **low cost** intervention with a cost rating of 1. This assessment was made on the basis of its group-based delivery model and relatively short duration. EPEC's best evidence comes from a single RCT conducted in south London, observing improvements in parent reports of their children's behaviour (d = .38 to .57) and improved parenting strategies (d = .69).[225]

Family Check-Up

Family Check-Up (FCU) is a Targeted-Selective intervention developed in the United States specifically for parents experiencing the same risks as those reached by the Troubled Families initiative.[226] FCU parents are eligible if they are assessed as having multiple risks associated with early childhood aggression, including low socio-economic status and parental mental health problems.[227] We include it here as a case example because

[225] Day, C., Michelson, D., Thomson, S., Penny, C., & Draper, L. (2012). Evaluation of a peer led parenting intervention for disruptive behaviour problems in children: Community based randomised controlled trial. *BMJ, 344,* e1107, doi: 10.1136/bmj.e1107

[226] Dishion, T. J., & Mauricio, A. M. (2016). The Family Check-Up model as prevention and treatment of adolescent drug (ab)use. In M. J. Van Ryzin, K. L. Kumpfer, G. M. Fosco, & M. Greenberg (Eds.), *Family-based prevention programmes for children and adolescents* (pp. 86–109). Hove: Psychology Press.

[227] Gill, A. M., Hyde, L. W., Shaw, D. S., Dishion, T. J., & Wilson, M. N. (2008). The family check-up in early childhood: A case study of intervention process and change. *Journal of Clinical Child & Adolescent Psychology*, *37*(4), 893–904.

of the relevance of its target population for the Troubled Families initiative and its innovative health maintenance model that tracks families for a period of at least five years at key transition points in the child's development. Examples of health maintenance models include the use of semi-annual dental cleanings and well-baby check-ups. FCU's details are summarised in Box D and a full summary of its evidence and implementation requirements can be found on the EIF website.

The FCU model is similar to other PMT programmes in that parents receive training in effective strategies for encouraging positive child behaviour and discouraging negative and aggressive child behaviour. This training is offered through the Everyday Parenting programme. Each family first participates in a comprehensive assessment (Family Check-Up) that determines a tailored package of support that is implemented to address their specific needs. Depending on the severity of the problems the parent is experiencing with his or her child, this package of support includes 1–15 sessions of the Everyday Parenting programme, which may be provided in addition to other community-based services. Family Check-Ups begin when the child is two years old and carry on annually until the transition to primary school.

Box D: Family Check-Up

Strength of evidence rating: 3+ **Cost rating:** 2

Most consistent child impacts: Reduced oppositional defiant behaviour, reduced aggression
Most consistent parent impacts: Improved parenting; reduced depression

Target population:	**Child's age:**	**Level of need:**
Parents with concerns about their child	Two	Targeted-Selective
Type of programme:	**Setting(s):**	**Who can deliver it?**
Individual	Community venues	Lead Practitioner: QCF Level 7/8 Social Worker; Psychologist
Country of origin:	**Where implemented?**	**Where evaluated?**
USA	USA	USA

Programme description: The Family Check-Up (FCU) for Children is a strengths-based, family-centred intervention that motivates parents to use parenting practices to support child competence, mental health, and risk reduction. The intervention has two phases. The first is a brief, three-session program that involves three 1-hour sessions: interview, assessment and feedback. The second phase is *Everyday Parenting*, a family management training programme that builds parents' skills in positive behaviour support, healthy limit-setting and relationship-building. As a health-promotion and prevention strategy, Phase 2 of the FCU can be limited to 1 to 3 *Everyday Parenting* sessions. As a treatment approach, Phase 2 can range from 3 to 15 *Everyday Parenting* sessions. The first phase may be followed by additional community referral services as indicated. The intervention model is tailored to address the specific needs of each family and can be integrated into a variety of service settings, including schools, primary care and community clinics.

Family Check-up: cost and impact

FCU's cost rating is 2, meaning that it is a **low-medium cost** programme to set up and implement. While the programme is delivered by clinically trained and supervised social workers and clinical psychologists, the time in contact with the child and parent is relatively short in comparison to some other programmes.

FCU was assessed as having Level 3+ evidence with evidence from two RCTs. The more rigorous of these two studies observed improvements in parenting behaviours when the child was age four that were in turn linked

to improvements in the children's behaviour assessed when they were age seven.[228,229,230,231,232] The study also observed good retention of programme participants despite their highly disadvantaged circumstances.[233]

No Effect

Two programmes were assessed as NE because their best evidence was from a rigorously conducted study that found no effect on any of the observed child primary outcomes. The first of these was the Family Links Nurturing Programme (FLNP), which was originally developed as a Universal intervention for parents with a child between the ages of 0 and 18. The programme's strongest evidence comes from an RCT that took place with families with a preschool child attending children's centres in Wales. This study observed no improvements for parents or children on any of the measured outcomes in comparison to the families participating in the comparison group.[234]

The study's authors speculate that the lack of an effect may have been due to programme attrition that reduced the study's ability to detect a significant effect, although the sample size specified in the original protocol was achieved. The authors also observe that FLNP may not be effective as a Universal parenting intervention for improving young children's behaviour. Other reasons for the lack of an observed effect may have been due to the fact that some participants in the control group attended other parenting interventions. The study concludes by recommending that the study's findings be used to design a new trial of the programme, which the FLNP providers are currently in the process of commissioning.

Toddlers without Tears

The Australian Toddlers without Tears programme is a second example of a programme assessed as NE because a well-conducted RCT could not confirm any positive benefits for children. Toddlers without Tears was originally developed to prevent behavioural problems from occurring in the first place by providing parents with advice through routine home visits during the child's first year. The programme consisted of three sessions when the baby was 8, 12 and 15 months old. At eight months, health visitors visited parents in their home and provided them with four handouts covering normal child behaviour, motor and social development and strategies for supporting children's language development. At 12 months, mothers attended a two-hour group session where they received information about strategies for creating a warm and sensitive environment and encouraging positive child behaviour. At 15 months, parents attended another group session discussing ways to discourage unwanted child behaviour. A full summary of its evidence can be found on the EIF website.

Study participants underwent assessments at six-month intervals starting at the child's first birthday and ending when the child was three years old. Although the study observed significant reductions in parents'

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[228] Shaw, D. S., Dishion, T. J., Supplee, L., Gardner, F., & Arnds, K. (2006). Randomized trial of a family-centered approach to the prevention of early conduct problems: 2-year effects of the Family Check-up in early childhood. *Journal of Consulting and Clinical Psychology, 74*, 1–9.

[229] Dishion, T. J., Shaw, D., Connell, A., Gardner, F., Weaver, C., & Wilson, M. (2008). The Family Check-up with high-risk indigent families: Preventing problem behaviour by increasing parents' positive behaviour support in early childhood. *Child Development, 7*, 1395–1414.

[230] Shaw, D. S., Connell, A., Dishion, T. J., Wilson, M. N., & Gardner, F. (2009). Improvements in maternal depression as a mediator of intervention effects on early childhood problem behaviour. *Developmental Psychopathology, 21*, 417–439.

[231] Lukenheimer, E. S. (2008). Collateral benefits for the family check-up on early childhood school readiness: Indirect effects of parents' positive behaviour support. *Developmental Psychopathology, 44*, 1737–1752.

[232] Dishion, T. J., Brennan, L. M., Shaw, D. S., McEachern, A. D., Wilson, M. N., & Booil, J. (2014). Prevention of problem behaviour through annual family check-up in early childhood: Intervention effects from home to early elementary school. *Journal of Abnormal Child Psychology, 42*, 343–354.

[233] Dishion, T. J., Shaw, D., Connell, A., Gardner, F., Weaver, C., & Wilson, M. (2008). The family check-up with high-risk indigent families: Preventing problem behavior by increasing parents' positive behavior support in early childhood. *Child Development*, *79*(5), 1395–1414.

[234] Simkiss, D. E., Snooks, H. A., Stallard, N., Kimani, P. K., Sewell, B., Fitzsimmons, D., ... & Stewart-Brown, S. (2013). Effectiveness and cost-effectiveness of a universal parenting skills programme in deprived communities: multicentre randomised controlled trial. *BMJ open*, *3*(8), e002851.

reports of the use of harsh discipline at the 24-month check, there were no positive benefits for parents or children in the intervention group by the time the child was three years old. On the basis of these findings, the authors concluded 'a brief universal parenting programme in primary care is insufficient to prevent development of preschool externalising problems' (p. 187). Toddlers without Tears has since been abandoned and a new trial, offering Targeted-Indicated support to parents with a three-year-old child with identified behavioural problems, is now under way.[235,236]

Box E: Toddlers without Tears

Strength of evidence rating: NE **Cost rating:** Not available

Most consistent child impacts: None observed

Most consistent parent impacts: Reductions in parent reports of harsh discipline

Target population:	**Child's age:**	**Level of need:**
All parents	Eight months	Universal
Type of programme:	**Setting(s):**	**Who can deliver it?**
Group/Individual	Community venues	Not available
Country of origin:	**Where implemented?**	**Where evaluated?**
Australia	Australia	Australia

Programme description: Toddlers without Tears (TwT) was an Australian health visiting intervention aimed at preventing the onset of childhood behavioural problems through preventative advice regarding age-appropriate expectations, parental warmth and sensitivity and age-appropriate discipline. It consisted of three sessions when the baby is 8, 12 and 15 months old. At 8 months, health visitors visited parents in their home and provided them with four handouts covering normal child behaviour, motor and social development and strategies for supporting children's language development. At 12 months, mothers attended a two-hour group session where they received information about strategies for creating a warm and sensitive environment and encouraging positive child behaviour. At 15 months, parents attended another group session discussing ways to discourage unwanted child behaviour.

[235] Bayer, J. K., Hiscock, H., Ukourmunne, O. C., Scalzo, K., & Wake, M. (2010). Three-year-old outcomes of a brief universal parenting intervention to prevent behaviour problems: Randomized controlled trial. *Archives of Disease in Childhood, 95*, 187–192.
[236] Hiscock, H., Bayer, J. K., Price, A., & Ukoumunne, O. (2008). Universal parenting programme to prevent early childhood behavioural problems: Cluster randomized trial. *British Medical Journal, 336*, 318–321.

Summary of Key Messages

This chapter considered the principles and evidence underpinning interventions that were developed specifically to improve young children's behaviour. Longitudinal studies consistently suggest that noncompliant behaviour is common in toddlers at 17 months, but then gradually decreases by the age of three. However, for a minority of children, noncompliant and aggressive behaviour actually increases from 2.5 years and onwards. Signals of risk associated with persistent noncompliant behaviour in early childhood include issues linked to the child's temperament and coercive parenting behaviours.

Twenty-seven of the interventions identified in this review had children's behaviour identified as one of their primary outcomes. The best evidence of 95% of these interventions involved children who were aged two or older. Ten of these interventions could be considered as evidence-based, with evidence of significantly improving both parenting practices and children's behaviour from at least one rigorously conducted RCT. Proportionally, this reflects a far greater number of evidence-based BMT interventions in comparison to those with evidence for improving children's attachment security or early cognitive development.

Interestingly, effective BMT programmes are relatively low cost in comparison to evidence-based programmes which primarily aim to improve children's attachment security or early cognitive and language development. This is because they are frequently offered to groups of parents and last a comparatively shorter period of time – typically six months or less.

One of these programmes (Incredible Years Preschool Basic) had evidence from three RCTs conducted in the UK. One of these studies included evidence of improved child behaviour lasting for ten years or longer. However, these benefits were only observed amongst families who attended the programme as a Targeted-Indicated intervention – meaning that their child had an identified behavioural problem. By contrast, the short-term impacts of IY delivered as a Targeted-Selective intervention faded over time. These results were similar to those observed for the Universal implementation of Group Triple P in Germany, which also observed initial positive impacts that also faded over time.

The review additionally identified two BMT programmes offered at the Universal level that observed no effect on any measured child outcome. In particular, the Toddlers without Tears programme provided no benefits to children in the short- or long-term, despite the fact that parents reported reductions in their use of harsh discipline. This intervention was offered to families through several short home visits during their child's first year as an effort to prevent behavioural problems from happening in the first place. In the end, the authors concluded that preventing persistent noncompliant behaviour may be difficult. This may be due to the fact that not all parents require help in reducing children's noncompliant behaviour, and also because parents may actually require opportunities to practice new skills to learn and master them at the time their child is the appropriate age.

Collectively, these findings indicate that BMT programmes may not prevent behavioural problems from happening in the first place, but could be quite useful in preventing identified problems from becoming worse – if offered at the appropriate time in the child's development. The implications for commissioning BMT programmes as part of a wider strategy for improving child outcomes will be discussed in greater detail at the end of this report.

Evidence-based behavioural management training programmes at a glance

Universal: No Universal interventions were assessed as having Level 3 evidence. This may be because many parents are able to adequately manage their young children's behaviour .

Targeted-Selective: **The Family Check-Up (FCU) for Children** is family-centred intervention developed for families living in disadvantaged circumstances that motivates parents to use parenting practices to support child competence, mental health, and risk reduction. The intervention has two phases. The first is a brief, three-session program that involves three 1-hour sessions: interview, assessment, and feedback. The second phase is *Everyday Parenting*, a family management training program that builds parents' skills in positive behaviour support, healthy limit-setting, and relationship-building. A key feature of the programme is the use of a health maintenance approach that involves a 'check-up' for family functioning at key transitions in the child's development.

Targeted-Indicated: Eight of the behaviour management training programmes assessed in this review had good short-term evidence of being effective at the Targeted-Indicated level. **The Incredible Years Preschool BASIC** programme additionally had long term evidence of preventing behavioural problems over time. Parents attend 18 to 20 weekly group sessions where they learn strategies for interacting positively with their child and discouraging unwanted behaviour. Two facilitators (QCF Level 7/8) lead parents in weekly 2-hour group discussions of mediated video vignettes, problem solving exercises and structured practice activities addressing parents' personal goals.

No Effect: **Toddlers without Tears (TwT)** was an Australian health visiting intervention aimed at preventing the onset of childhood behavioural problems through preventative advice provided when the baby is 8, 12 and 15 months old. TwT had observed **no effect** on any child outcome at either of its long-term follow-ups. The evaluators concluded that brief Universal parenting programme in primary care is likely insufficient to prevent the development of preschool behavioural problems. The Australian government is now in the process of developing and evaluating a Targeted-Indicated intervention that will be provided to parents experiencing specific problems with their child's behaviour when he or she is over two years old.

Chapter 6

Interventions that support children's early cognitive and language development

Cognitive development is the process by which children learn to think and understand. It encompasses a wide range of neurological and intellectual activities that include perception, memory, information processing, problem solving, knowledge and language. The foundation for cognitive development is established through a series of complex genetic and environmental processes that begin in the second month post-fertilisation.[237] Once the child is born, genetic and environmental processes continue to shape the child's ability to perceive and understand as he or she develops. Although initial genetic processes are clearly inherited, the child's environment during the early years is primarily determined by his or her parents.[238,239]

The Best Start at Home review identified 34[240] interventions that aim to support children's early cognitive and language development through parent–child interaction. These interventions ranged from large-scale community initiatives to speech and language therapies offered to individual children. In this chapter, we present information about the evidence and costs of a subset of 20 of these interventions.

It is worth noting that the programmes described here represent a relatively narrow range of the programmes that exist more generally. There are several reasons for this:

1) The Best Start at Home review was conducted at a rapid pace, meaning that it was not fully comprehensive and did not exhaustively search all databases.

2) Programmes may have been missed because of the scope of the review. This scope excluded programmes that included children over the age of five and programmes that might be described as therapy. Hence, many reading programmes and forms of speech therapy may have been excluded.

3) Many of the programmes targeting children's early learning have not yet undergone any rigorous evaluation, therefore restricting the number of evaluation studies that could be found.

4) Much of the activity in this area is delivered through preschools, nurseries and day care. Although this activity often includes a parenting component, it is not always described as part of the intervention.

5) A number of programmes first identified in the Best Start at Home review were ruled out of scope because they were large-scale initiatives involving a number of separate components. We discuss some of the findings from these programmes in the first part of this chapter to provide some context, but do not include them in any of the analyses.

It is thus clear that many programmes were likely missed from this assessment. This shortcoming will be addressed in future reviews. We nevertheless believe that some of the trends observed in our analyses reinforce principles that have been observed in the wider literature – so present them here within this context.

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[237] Fox, S. A., Levitt, P., & Nelson, C. A. (2010). How the timing and quality of early experiences influence the development of brain architecture. *Child Development, 81*, 28–40.

[238] Tamis-LeMonda, C. S., & Lugo-Gil, J. (2008). Family resources and parenting quality: Links to children's cognitive development across the first 3 years. *Child Development, 79*, 1065–1085.

[239] Sameroff, A. J., & Chandler, M. J. (1975). Review of child development research. *Review of Child Development Research*, *4*.

[240] The Best Start at Home review originally reports 30 interventions, although we found that one of these programmes was, in fact, five separate interventions, bringing the total to 34.

We do this first by summarising the theoretical frameworks for many of the programmes discussed in this chapter. We then go on to consider the ways in which these theories have been applied to interventions that support children's early cognitive development. This is followed by an overview of the aggregate findings of the evidence and costs of the 20 early learning interventions that underwent an EIF strength of evidence and cost assessment. Key points about what these programmes have and have not achieved are then illustrated through four case examples. The chapter concludes with a summary of the findings and their implications for the commissioning and delivery of interventions that support children's early learning through parent–child interaction.

Parental scaffolding

The Russian psychologist Lev Vygotsky maintained that cognitive development fundamentally takes place through children's social interactions, especially those involving 'more knowledgeable others' (i.e. parents and other adults).[241,242] While Vygotsky also described early learning in terms of children's interaction with objects, he highlighted the ways in which parent and other adult behaviours facilitated and shaped children's thought processes during these activities.

Adult instruction often includes demonstrations and explanations. However, Vygotsky felt that children learn best through hands-on activities that are within their unique 'zone of potential development' or ZPD. Vygotsky defined the ZPD as the distance between what the child is currently capable of and what he or she can readily learn through adult guidance.

A common example of learning within the ZPD is teaching children to tie their shoelaces. In order to do this successfully, the adult must understand the child's capabilities and know how to break the task down into steps that the child can readily achieve. Most adults will recognise that shoelace tying is impossible for an infant, but feasible for a preschooler. Young children will nevertheless differ dramatically in their ability to learn specific skills. Adults must therefore be able to accurately assess the child's unique skill level, as well as his or her individual limitations.

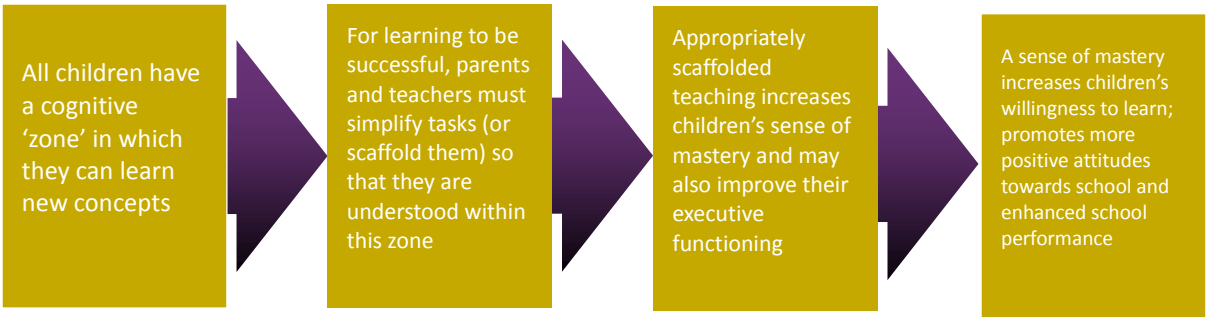
Jerome Bruner has since referred to adult teaching within the ZPD as 'scaffolding' and observed that it encompasses a variety of instructional and non-instructional behaviours. These behaviours include the ability to simultaneously keep the child's attention focused on the task's critical features and manage the child's frustration when things become difficult.[243] From this perspective, effective scaffolding requires a fair degree of sensitivity towards the child's needs as a learner. When sensitive scaffolding occurs, children are more likely to master the task and gain a sense of mastery. These positive feelings should, in turn, contribute to children's overall self-confidence and future willingness to learn (Figure 48).

[241] Vygotsky, L. (1962). *Thought and Language*. Cambridge, MA: MIT Press.

[242] Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.

[243] Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry, 17*, 89–100.

Figure 48: The contribution of scaffolding to children's willingness to learn



Scaffolding and language development

Vygotsky also considered the ways in which parenting behaviours and other social contexts contribute to children's language development. Vygotsky believed that children's cognitive understanding of the world is substantially shaped by the acquisition of language (at around age three), which provides the child with a mechanism for inner speech. The child then uses this inner speech to regulate his or her own understanding of objects and events.

Although Vygotsky was interested in the relationship between language and thought, he provided little detail about how language is acquired. However, Bruner and others have since identified specific parenting behaviours that clearly reinforce children's early language learning.[244] These behaviours include the infant directed speech (IDS) that is present in the reciprocal parent–infant interactions first described in the attachment chapter.[245] These interactions typically begin when the infant makes a bid for the parent's attention with a smile or a coo. Most parents will smile in return and then say something that is matched to the infant's vocal and emotional tone, for example – *look at you! Aren't you happy today!* The infant might then smile and gurgle back, to which the parent will likely respond with another remark, or poke or tug. At this point, the baby may laugh or squeal, and the parent will respond again with another appropriately matched response.

Over time, babies begin to mimic the speech sounds heard in their environment and parents are quick to reinforce them through exaggerated talk that links infant sounds to specific words. Initially, these words refer to individual objects (e g. mama, dada), but are quickly used by parents to represent simple concepts (happy, sad, bye-bye). Scientists believe that this gentle, but exaggerated baby talk reinforces four important skills: 1) it helps the baby to better differentiate the sounds of words, 2) it associates words with emotional expressions, 3) it helps to deploy the infant's attention to the meaning of specific words and 4) it encourages the use of language for communication.

While children can learn language in the absence of IDS, a growing body of evidence suggests that it is particularly helpful in the early phases of children's language development.[246] Through these interactions, babies not only come to understand the relationship between specific sounds and concepts, they also come to understand themselves as an individual who can meaningfully communicate.[247]

[244] Ratner, N., & Bruner, J. (1978). Games, social exchange and the acquisition of language. *Journal of Child Language, 5*, 391–401.

[245] Murray, L., & Trevarthon, C. (1986). The infant's role in mother–infant communications. *Journal of Child Language, 13*, 15–29.

[246] Ma, W., Golinkoff, R. M., Houston, D., & Hirsh-Pasek, A. (2011). Word Learning in Infant- and Adult-Directed Speech. *Language Learning and Development, 7*, 209–225.

[247] Bruner, J. S. (1974). From communication to language—A psychological perspective. *Cognition*, *3*(3), 255–287.

Most children understand that language is an effective means of communication and have already mastered a few words by the time of their first birthday.[248] Parents implicitly understand this shift in their child's linguistic knowledge and adjust their speech accordingly.[249] Changes in parents' speech reflect both what the child knows and can do, but also the contexts in which language is shared and learned.

An ideal context for early language learning is shared book reading.[250] Most toddlers love being read to and will have identified several favourite stories by the time they are 18 months old.[251] The structured nature of children's books introduces children to new words and provides them with opportunities to practise and apply them in different contexts. Books also allow children to imagine new situations, both real and pretend, that are different from the situations they experience at home. It is also likely that shared book reading provides a context that additionally reinforces the attachment relationship through opportunities for positive parent and child exchanges.[252]

Scaffolding and executive functions

Vygotsky's ideas about children's use of inner speech also have implications for the early development of executive functions. Executive functions are higher-order cognitive processes that allow children to plan, stay focused and manage their impulses. These skills include working memory (i.e. the ability to remember and manipulate information while completing simple tasks), impulse control, cognitive flexibility and the ability to delay gratification. Evidence suggests that it is these skills, as well as knowledge of letters and numbers, which best prepare children for the transition to school.[253]

Executive functions begin to develop in infancy as children learn how to manage their emotions and behaviour, as described in the previous two chapters. Executive functions then continue to develop throughout early childhood within the context of sensitive parent–child interaction. The development of executive functions in the first two years is gradual, however, in comparison to the rapid growth that takes place between the ages of three and five. During this time, children's ability to pay attention, delay gratification and think strategically dramatically increases and then continues to mature as children develop.[254]

Executive functions not only help children process information more efficiently, they also help children better manage the stress and frustration they might encounter when attempting a difficult task. Recent studies suggest that sensitive parental scaffolding contributes to the development of children's executive functions in the later preschool years.[255] Scaffolding behaviours that particularly support children's executive function include the non-instructional support parents provide when helping their child complete difficult tasks. These behaviours include the ability to follow and respond appropriately to the child's perspective, provide helpful

[248] Carpenter, M., Nagell, K., Tomasello, M., Butterworth, G., & Moore, C. (1998). Social cognition, joint attention, and communicative competence from 9 to 15 months of age. *Monographs of the Society for Research in Child Development*, i–174.
[249] Snow, C. E. (1972). Mothers' speech to children learning language. *Child Development, 43*, 549–565.
[250] Snow, C. E., Burns, S. M., & Grifin, P. (Eds.) (1998). *Preventing reading difficulties in children*. Washington, DC: National Academy Press.
[251] Ortiz, C., Stowe, R. M., & Arnold, D.H. (2001). Parental influence on child interest in shared picture book reading. *Early Childhood Research Quarterly, 16*, 263–281.
[252] Bus, A. G., Belsky, J., van Izjendoorn, M. H., & Crnic, K. (1997). Attachment and book reading patterns: A study of mothers, fathers, and their toddlers. *Early Childhood Research Quarterly, 12*, 81–98.
[253] Blair, C., & Razza, R. P. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development*, *78*(2), 647–663.
[254] Shonkoff, J. P., Duncan, G. J., Fisher, P. A., Magnuson, K., & Raver, C. (2011). Building the brain's "air traffic control" system: How early experiences shape the development of executive function. *Contract*, (11).
[255] Hammond, S. I., Müller, U., Caprendale, J. I., Bibok, M. B., & Liebermann-Finestone, D. P. (2012). The effects of parental scaffolding on preschoolers' executive function. *Developmental Psychology, 48*, 271–281.

hints and clues and provide children with strategies for managing their own frustration.[256] These strategies then become part of the child's own inner speech that he or she uses to manage frustration and deploy attention appropriately.[257]

Interestingly, preliminary studies have observed that the quality of parent–child interaction in toddlerhood predicts children's executive functioning in later preschool. Specifically, Bernier and colleagues found that parental sensitivity and children's attachment security assessed at 15 months significantly predicted children's working memory and ability to flexibly focus on key aspects of a difficult task at age 3, after controlling for concurrent mother and child behaviours and parental socio-economic status.[258] Interestingly, this same study also observed that other executive functions – such as impulse control – were better predicted by the parents' verbal skills and the child's concurrent language capabilities. Hence, sensitive parenting behaviours and attachment security may play a meaningful role in the development of some, but not all of children's executive functions.

Ecological systems theory

Russian/American psychologist Urie Bronfenbrenner drew heavily from Vygotsky's ideas in developing his ecological systems theory and bioecological model of human development. Not only did Bronfenbrenner maintain that human development was fundamentally a social process, he observed that its course was determined by increasingly complex reciprocal interactions occurring across multiple social systems. These systems begin with the individual, and then extend outwards to the family, school, community and society. Like a set of Russian nested dolls, Bronfenbrenner asserted that each social environment exerts its influence on the other. In this respect, it is the combined effects of multiple environments (as opposed to any single one) that determine each child's developmental trajectory (see Figure 49).[259]

Bronfenbrenner's ecological systems theory begins with the child as the 'engine' of his or her own development which is, in turn, directly influenced by his or her microsystem – i.e. the immediate environment in which the child's interactions with parents, caregivers and friends take place. Within the microsystem, the child actively influences his or her family, school and community, while these environments simultaneously influence him or her. Individual child characteristics, such as temperament and physical health, influence and interact with parenting behaviours and family structure, to determine immediate developmental outcomes.

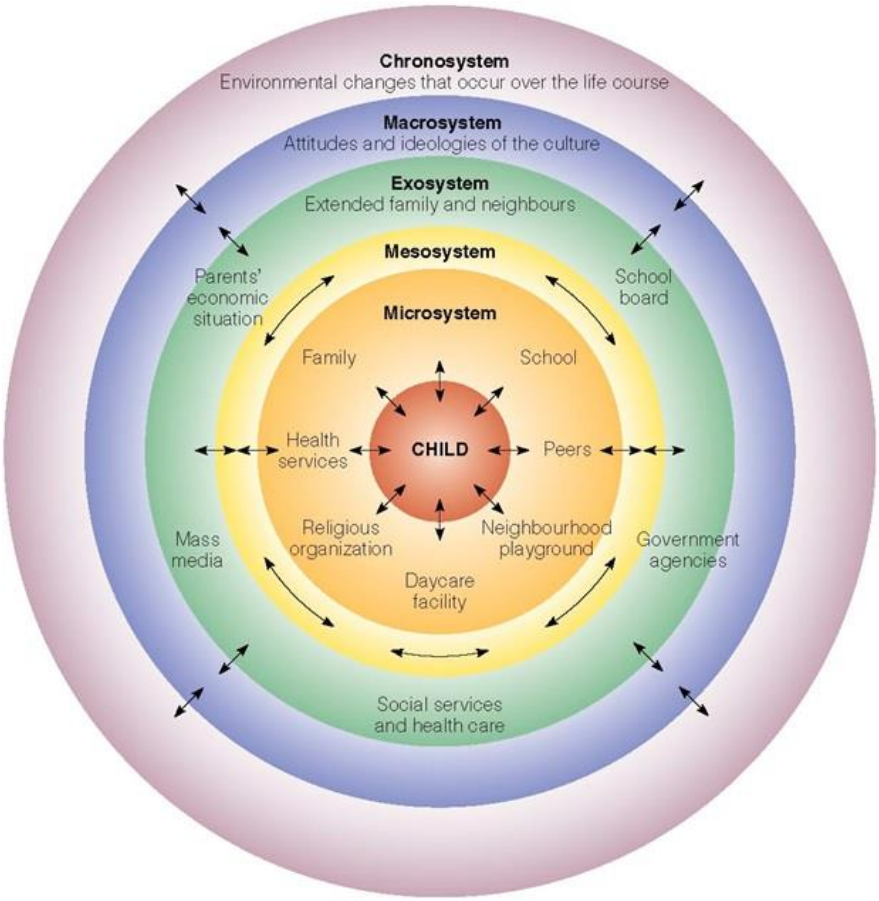
[256] Bernier, A., Carlson, S. M., & Whipple, N. (2010). From external regulation to self-regulation: Early parenting precursors of young children's executive functioning. *Child Development, 81*, 326–339.

[257] Kopp, C. B. (1982). Antecedents of self-regulation: A developmental perspective. *Developmental Psychology, 18*, 199–214.

[258] Bernier, A., Carlson, S. M., Deschênes, M., & Matte-Gagné, C. (2012). Social factors in the development of early executive functioning: A closer look at the caregiving environment. *Developmental Science, 15*, 12–24.

[259] Bronfenbrenner, U. (1979). *The Ecology of Human Development: Experiments by Nature and Design.* Cambridge, MA: Harvard University Press.

Figure 49: Bronfenbrenner's ecological systems theory



Family interactions are then further influenced by the mesosystem, which involves the family and community, including each family's relationship with its schools, churches and community. Children's interactions with peers also take place at the level of the mesosystem. The mesosystem is then further influenced by the exosystem, which affects family life through parents' employment and access to community resources. The exosystem is in turn surrounded by the macrosystem, which includes each child's religion, culture and race. Hence, the beliefs, values and societal rules that constitute the macrosystem provide the 'top down' governance that determines how children, families, schools and communities interact.

Bronfenbrenner first described the original five systems in the 1970s. These ideas were then reworked into his bioecological model of development to explain the mechanisms by which the systems jointly impact children's development over time (i.e. the chronosystem).[260,261] This is commonly referred to as the PPCT model, representing the following four components:

- **Process** refers to the reciprocal interactions that take place between the child and his or her environment. Processes may be proximal and direct – i.e. occurring between the child and his or her parents, teachers or friends. Processes can also be distal – i.e. phenomena that indirectly affect the

[260] Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-nurture reconceptualized in developmental perspective: A bioecological model. *Psychological Review, 101*, 568–586.

[261] Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. In P. Moen, G. Elder, Jr., & K. Lüscher (Eds.), *Examining lives in context: Perspectives on the ecology of human development* (pp. 619–647). Washington, DC: American Psychological Association.

child – through his or her parents' ability to find work, the quality of community resources and the family's overall integration into society.

- **Person** refers to the characteristics of the individual child. These characteristics include the child's gender, age, temperament, innate cognitive abilities and physical health.
- **Context** refers to the micro, meso, exo and macro systems.
- **Time** refers to events and their duration. For example an acute but short illness will impact the child differently than problems that are chronic and enduring over time.

Bronfenbrenner's ecological systems theory has many applications, including an understanding of the various risk factors that exist at each ecological level.[262] As one of the original developers of the Head Start initiative in the United States, Bronfenbrenner was also one of the first to identify the ways in which social disadvantage negatively impacted children on multiple ecological levels.[263] The next section describes the ways in which Bronfenbrenner's ideas (along with the research of others) have influenced the development of early intervention programmes that specifically aim to support children's early cognitive development.

Children's cognitive development and early intervention

The majority of programmes identified in the Best Start at Home review were developed as Targeted-Selective interventions that aim to improve the early learning of young children growing up in disadvantaged communities. A smaller proportion were developed as Targeted-Indicated programmes where a language delay or speech difficulty had been identified. We describe the aims and objectives of both of these model types in the sections below.

Targeted-Selective interventions which aim to reduce the achievement gap amongst socially disadvantaged children

Social disadvantage during the early years is a primary risk factor for academic problems throughout children's development.[264,265,266] By the time children enter reception, the difference between low- and middle-income children is stark and persistent. Although the overall attainment of preschool children in the UK has risen over the past 13 years, the gap between lower- and middle-income children assessed as having a good level of development (GLD) has remained at a constant 19%.[267]

While the reasons for this gap are debated, it is clear that poverty and the adversities affiliated with it negatively affect early development through direct and indirect processes existing on multiple ecological

[262] Belsky, J. (1993). Etiology of child maltreatment: A developmental-ecological analysis. *Psychological Bulletin, 114*, 413–434.
[263] Bronfenbrenner, U. (1979). *The Ecology of Human Development: Experiments by Nature and Design*. Cambridge, MA: Harvard University Press.
[264] Hatas, D. (2012). Inequality and the home learning environment: Predictions about seven-year-olds' language and literacy. *British Educational Research Journal, 38*, 859–879.
[265] Sammons, P., Toth, K., Sylva, K., Melhuish, E., Siraj, I., & Taggart, B. (2015). The long-term role of the home learning environment in shaping students' academic attainment in secondary school. *Journal of Children's Services, 10*, 189–201.
[266] Dickerson, A., and Popli, G. K. (2016). Persistent poverty and children's cognitive development: Evidence from the UK Millennium Cohort study. *Journal of the Royal Statistical Society, 176*, 535–558.
[267] Ofsted (2015). Early years. Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/445730/Early_years_report_2015.pdf

levels.[268,269] Indirect processes include limited financial resources and low educational attainment that restrict parents' capacity to provide their children with a sufficiently enriching environment.[270,271] Direct processes include the ways in which parents interact with their children through language and scaffolding behaviours.[272,273,274] For example, studies consistently suggest that university-educated mothers talk to their babies more frequently, use a richer vocabulary and respond more appropriately to their babies' speech than mothers who did not complete secondary school or attend university.[275,276,277] Maternal verbal ability and sensitivity in infancy have also been linked to behaviours associated with children's executive functioning (particularly their planning capabilities) when they enter primary school.[278] Other factors that negatively impact children's early cognitive development include maternal depression and perceptions of neighbourhood safety.[279,280,281]

Research studies suggest that parenting behaviours in early childhood both moderate and mediate some of the deleterious effects of low socio-economic status (SES). Longitudinal studies conducted on both sides of the Atlantic have consistently observed that key aspects of the home environment, including material goods and parenting behaviours, mediate a variety of developmental outcomes for disadvantaged children.[282,283,284,285,286] Waldfogel and Washbrook have estimated that parenting behaviours that include maternal sensitivity, shared

[268] Engle, P. L., & Black, M. M. (2008). The effect of poverty on child development and educational outcomes. *The Annals of the New York Academy of Sciences, 1136*, 243–256.

[269] Leon, F. (2003). Inequality in the early cognitive development of British children in the 1970 cohort. *Economica, 70*, 73–97.

[270] Lugo-Gil, J., & Tamis-LeMonda, C. S. (2008). Family resources and parenting quality: Links to children's cognitive development across the first 3 years. *Child Development, 79*, 1065–1085.

[271] Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I., & Taggart, B. (2004). The effective pre-school education (EPPE) project: Final report. A longitudinal study funded by the DfES 1997–2004.

[272] Tamis-LeMonda, C. S., Bornstein, M. H., & Baumwell, L. (2001). Maternal responsiveness and children's achievement of language milestones. *Child Development, 72*, 748–767.

[273] Rodriguez, E. T., & Tamis-LeMonda, C. S. (2011). Trajectories of the home learning environment across the first 5 years: Associations with children's vocabulary and literacy skills at pre-kindergarten. *Child Development, 82*, 1058–1075.

[274] Song, L., Spier, E. T., & Tamis-Lemonda, C. (2014). Reciprocal influences between maternal language and children's language and cognitive development in low-income families. *Journal of Child Language, 41*, 305–326.

[275]Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review, 26*, 55–88.

[276] Hart, B., & Risley, T. R. (2003). The early catastrophe: The 30 million word gap by age 3. *American Educator, 27*(1), 4–9.

[277] Hoff, E. (2003). The specificity of environmental influence: Socioeconomic status affects early vocabulary development via maternal speech. *Child Development, 74*, 1368–1378.

[278] Hackman, D. A., Gallop, R., Evans, G. W., & Farah, M. J. (2015). Socioeconomic status and executive function: Developmental trajectories and mediation. *Developmental Science, 8*, 1–15.

[279] French, A., & Kimbro, R. T. (2011). Maternal mental health, neighborhood characteristics, and time investments in children. *Journal of Marriage and Family, 73,* 605–620.

[280] Baydar, N., Küntay, A. C., Yagmurlu, B., Aydemir, N., Cankaya, D., Göksen, F., & Cemalcilar, Z. (2014). "It takes a village" to support the vocabulary development of children with multiple risk factors. *Developmental Psychology, 50*, 1014–1025.

[281] Fuligni, A. S., Brady-Smith, C., Tamis-LeMonda, C. S., Bradley, R. H., Chazan-Cohen, R., Boyce, L., & Brooks-Gunn, J. (2013). Patterns of supportive mothering with 1-, 2-, and 3-year-olds by ethnicity in Early Head Start. *Parenting: Science and Practice, 13*, 44–57.

[282] Kelly, Y., Sacker, A., Bono, E. D., Francesconi, M., & Marmot, M. (2011). What role for the home learning environment and parenting in reducing the socioeconomic gradient in child development? Findings from the Millennium Cohort Study. *Archives of the Diseases of Childhood, 10*, 1–6.

[283] Flouri, E., MIdouhas, E., Joshi, H., & Travidis, N. (2015). Emotional and behavioural resilience to multiple risk exposure in early life: The role of parenting. *European Journal of Child and Adolescent Psychiatry, 24*, 745–755.

[284] Yoshikawa, H., Aber, J. L., & Beardslee, W. R. (2012). The effects of poverty on the mental, emotional and behavioural health of children and youth: Implications for prevention. *American Psychologist, 67*, 272–284.

[285] Gershoff, E. T., Aber, J. L., Raver, C. C., & Lennon, M. C. (2007). Income is not enough: Incorporating material hardship into models of income associations with parenting and child development. *Child Development, 78*, 70–95.

[286] Klebanov, P. K., Brooks-Gunn, J., Chase-Lansdale, P. L., & Gordon, R. A. (1997). Are neighborhood effects of young children mediated by features of the home environment? In J. Brooks-Gunn, G. J. Duncan, and J. L. Aber (Eds.), *Neighborhood Poverty Volume I: Context and consequences for children*. New York: Russel Sage.

book reading, out-of-home activities and parent management behaviours explain approximately 40% of the income-related gaps in cognitive outcomes for children at age four.[287]

Narrowing the gap

In 1974, Bronfenbrenner proposed several early intervention model types with good potential for reducing the developmental gaps that exist between rich and poor preschool children.[288] His ideas have since informed a variety of large-scale interventions that explicitly address the risks known to negatively impact the early learning of children living in disadvantaged communities.[289] While middle-class children also benefit from these kinds of interventions, their additional value over what these families typically access on their own is often small, to non-existent.[290,291,292]

Community-based initiatives addressing disadvantaged children's early learning tend to fall into one of three categories:

- Two-generation, multi-component programmes that combine an enriching classroom-based curriculum with individual (frequently home visiting) support for the parents. Although these programmes are typically offered through preschool settings, they should not be confused with Universal preschool curriculums that are primarily offered to the child.
- Home visiting interventions that teach parents effective scaffolding strategies and help them create a stimulating home environment through the provision of age-appropriate toys and books.
- Language and pre-literacy programmes, that promote shared reading activities and children's use of language.

Two-generation classroom-based interventions

The Best Start at Home review identified 11 two-generation, multi-component programmes, as listed in Table 9. These programmes did not undergo an EIF strength of evidence assessment, however, because they would not be easy to commission within the UK context. They are, however, underpinned by established evidence which illustrates the potential of these programmes for improving child outcomes in disadvantaged communities.[293] These programmes include a number of well-implemented regional preschools (including the Chicago Child–Parent Center Program and the Tulsa pre-kindergarten programme), as well as several well-known national US initiatives, such as Head Start and Early Head Start.

[287] Waldfogel, Jane, & Washbrook, Elizabeth (2011). Income-related gaps in school readiness in the United States and United Kingdom. In T. Smeeding, R. Erikson, & M. Jantti (Eds.), *Persistence, Privilege, and Parenting: The Comparative Study of Intergenerational Mobility* (pp. 175–208). New York: Russell Sage Foundation.

[288] Bronfenbrenner, U. (1974). Is early intervention effective? *Day Care and Early Education, 2,* 14–18.

[289] Duncan, G. J., & Magnuson, K. (2013). Investing in preschool programs. *Journal of Economic Perspectives, 27,* 109–132.

[290] Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I., & Taggart, B. (2004). The effective pre-school education (EPPE) project: Final report. A longitudinal study funded by the DfES 1997–2004.

[291] Ramey, C. T., & Ramey, S. L. (1998). Early intervention and early experience. *American Psychologist, 53*, 109–120.

[292] Duncan, G. J., & Soujourner, A. J. (2013). Can intensive early childhood intervention programs eliminate income-based cognitive and achievement gaps? *Journal of Human Resources, 48*, 945–968.

[293] Duncan, G. J., & Magnuson, K. (2013). Investing in preschool programs. *Journal of Economic Perspectives, 27,* 109–132.

TABLE 9: MULTICOMPONENT INITIATIVES THAT AIM TO SUPPORT CHILDREN'S EARLY LEARNING IDENTIFIED IN THE BEST START AT HOME REVIEW

1.	Head Start (US)
2.	Early Head Start (US)
3.	Perry Preschool (US)
4.	Parent–Child Development Center (Chicago) (US)
5.	Infant Health and Development Program (US)
6.	Parent-Child Home Program (US)
7.	Early Steps to School Success (US)
8.	My Baby and Me (US)
9.	Evenstart (US)
10.	Sure Start (UK)
11.	Busselton Health Study (New Zealand)

The majority of these programmes have undergone extensive and rigorous evaluations, with many demonstrating short-term and sometime dramatic gains in children's cognitive skills. For example, findings from both the Perry Preschool and Abecedarian projects in the United States observed gains over one standard deviation in children's IQ immediately upon programme completion, followed by improvements in their health and employment that lasted into middle adulthood.[294,295,296,297,,298]

Similar short-term gains have been observed for the Head Start programme that has undergone multiple rigorous studies, including two RCTs. The first of these was conducted in the 1960s and the second, that is still underway, began in 2002. Both trials observed consistent, and in the first instance striking, short-term benefits for children's early learning and pre-literacy skills immediately upon programme completion.[299,300] Disappointingly, however, both studies observed that the programme benefits faded out rapidly once children entered primary school.[301,302] While the reasons for this are not clear, some have speculated that it may be linked to the reduced dose of the Head Start programme (in comparison to the Abecedarian and Perry

[294] Weikart, D. P., Deloria, D., Lawser, S., & Wiegerink, R. (1970). *Longitudinal Results of the Ypsilanti Perry Preschool Project* (Monographs of the High/Scope Educational Research Foundation, 1). Ypsilanti, MI: High/Scope Press.

[295] Schweinhart, L. J., Montie, J., Xiang, Z., Barnett, W. S., Belfield, C. R., & Nores, M. (2005). *Lifetime Effects: The HighScope Perry Preschool Study through Age 40* (Monographs of the HighScope Educational Research Foundation, 14). Ypsilanti, MI: HighScope Press.

[296] Ramey, C. T., & Campbell, F. A. (1979). Compensatory education for disadvantaged children. *School Review, 87*, 171–189.

[297] Campbell, F. A., Pungello, E. P., Burchinal, M., Kainz, K., Pan, Y., Wasik, B. H., Sparling, J., & Ramey, C. T. (2012). Adult outcomes as a function of an early childhood educational program: An Abecedarian Project follow-up. *Developmental Psychology, 48*, 1033–1043.

[298] Englund, M., White, B., Reynolds, A. J., Schweinhart, L., & Campbell, F. A. (2014). Health outcomes of the Abecedarian, Child-Parent Center and High-Scope Perry Preschool Programs. In A. J., Reynolds, A. J. Rolnick, & J. A. Temple (Eds.), *Health and Education in Early Childhood: Predictors, Interventions and Policies* (pp. 257–285). New York: Cambridge University Press.

[299] Zigler, E., & Muenchow, S. (1992). Head Start: The Inside Story of America's Most Successful Educational Experiment. New York: Basic Books.

[300] Gibbs, C., Ludwig, J., & Miller, D. L. (2011). *Does Head Start Do Any Lasting Good?* (No. w17452). National Bureau of Economic Research.

[301] Barnett, W. S., & Hustedt, J. T. (2005). Head Start's lasting benefits. *Infants & Young Children*, *18*(1), 16–24.

[302] Puma, M., Bell, S., Cook, R., Heid, C., Broene, P., Jenkins, F., Mashburn, A., & Downer, J. (2012). Third grade follow-up to the Head Start Impact Study. Head Start Research. Available: http://www.acf.hhs.gov/sites/default/files/opre/head_start_report.pdf

projects) and inconsistencies in the delivery of the Head Start programme across sites. It is also clear that in the most recent study, the relative disadvantage between Head Start and non-Head Start children is much less than it was for Perry Preschool and Abecedarian participants in the 1960s and 1970s.[303]

It is nevertheless worth noting that several longer-term 'sleeper effects' were observed for Head Start participants in a 30-year follow-up of the first RCT. This study compared Head Start children's outcomes to those of their siblings who did not participate in the programme and observed that Head Start participants were more likely to complete high school and enter employment in early adulthood.[304] For this reason, there is optimism that sleeper effects will also be observed for Head Start participants in the current RCT.

Sure Start Children's Centres

The Sure Start initiative was first developed in the late 1990s as a means to improve the outcomes of the most disadvantaged preschool children living in England and Wales. Although Sure Start's original aims were similar to Head Start, Perry Preschool and Abecedarian, there was never a required core offer. Thus, local authorities vary dramatically in the offer of support they provide to families with a child under the age of five.[305]

Originally, Sure Start Local Programmes operated in 250 of the country's most deprived communities. In 2005, the initiative expanded into Children's Centres that served as 'one-stop-shops' for all families with young children in every local authority. By 2010, there were 3,631 Children's Centres in England and Wales. Some of these centres have since closed, bringing the current number to 3,350.[306]

While Children's Centres have undergone multiple evaluations, their results are more difficult to interpret because of limitations of the evaluation designs and dramatic variations in the package of support available across local authorities.[307] While the findings from the first evaluation were largely disappointing, findings from the second observed potential improvements in families' access to community services, their home learning environments and some parenting behaviours.[308,309] Findings from the initiative's most recent evaluation suggest that programme benefits are the greatest amongst Children's Centres that are offered through a school settings and include a named (i.e. evidence-based) parenting intervention as part of its offer.[310,311]

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[303] Duncan, G. J., & Magnuson, K. (2013). Investing in preschool programs. *Journal of Economic Perspectives, 27,* 109–132.

[304] Ludwig, J., & Miller, D. L. (2007). Does Head Start improve children's life chances? Evidence from a regression discontinuity design. *Quarterly Journal of Economics, 122*, 159–208.

[305] Belsky, J., Melhuish, E., & Barnes, J. (2007). The National Evaluation of Sure Start: Does Area-based Early Intervention Work? Bristol: Policy Press.

[306] Smith, G., Field, K., & Smith, T. (2014). Evaluation of Children's Centres in England (ECCE): The extent to which centres 'reach' eligible families, their neighbourhood characteristics and levels of use. The Department for Education: DFE-RR358. Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/318227/RR358_-_FINALrevisedReachReport07042014.pdf

[307] Melhuish, E., & Hall, D. (2007). The policy background to Sure Start. In J. Belsky, E. Melhuish, & J. Barnes (Eds.), *The National Evaluation of Sure Start: Does Area-based Early Intervention Work?* (pp. 3–21). Bristol: Policy Press.

[308] Belsky, J., Melhuish, E., Barnes, J., Leyland, A. H., & Romaniuk, H. (2006). Effects of Sure Start local programmes on children and families: early findings from a quasi-experimental, cross sectional study. *BMJ*, 332, 1476.

[309] Melhuish, E., Belsky, J., Leyland, A. H., Barnes, J., & The National Evaluation of Sure Start Research Team. (2008). Effects of fully-established Sure Start Local Programmes on 3-year-old children and their families living in England: A quasi-experimental observational study. *The Lancet*, *372*(9650), 1641–1647.

[310] Melhuish, E., Belsky, J., Leyland, A. H., Barnes, J., & The National Evaluation of Sure Start Research Team. (2008). Effects of fully-established Sure Start Local Programmes on 3-year-old children and their families living in England: A quasi-experimental observational study. *The Lancet, 372*(9650), 1641–1647.

[311] Hall, J., Eisenstadt, N., Sylva, K., Smith, T., Sammons, P., Smith, G., & Hussey, D. (2015). A review of the services offered by English Sure Start Children's Centres in 2011 and 2012. *Oxford Review of Education*, (ahead-of-print), 1–16.

Collectively, findings from multi-component, community-based initiatives suggest that short- and long-term improvements in disadvantaged children's cognitive capabilities can be achieved. However, the most effective interventions share some important characteristics that should be kept in mind:

- They are fairly long in duration and intensive to deliver. Perry Preschool lasted for two years and Abecedarian for five
- Programmes appear to be more effective if they include a well-structured preschool curriculum that supports active learning
- Staff qualifications and low teacher-to-child ratios increase the likelihood of an improved child outcome.

Home visiting programmes

Home visiting as a strategy for combating the adverse effects of poverty dates back to the work of Florence Nightingale, who identified a need for nurses to work within communities to prevent the spread of infectious diseases. Within the UK, Health Visitors were originally trained and organised as a work force to decrease rates of infant mortality through regular home visits to families living in impoverished communities. Health Visiting has since evolved into Universal service that aims to promote family health more generally.[312]

Health Visiting does not exist as a Universal service in the United States. However, since the 1970s a number of home visiting interventions have been developed to serve a similar role by supporting the health and cognitive development of young children living in highly disadvantaged circumstances.[313] Bronfenbrenner believed that home visiting was particularly useful for improving the quality of parent–child interaction that takes place during the child's first three years and advised that these interventions be delivered on a weekly basis to families living in disadvantaged communities.[314]

The Best Start at Home review identified 16 home visiting programmes. Some of these programmes were determined to be out of the scope of this assessment because of their lack of relevance to the UK context or because they targeted families where there was a specific child protection concern. However, four programmes – FNP, Child First, Parents as First Teachers and HIPPY (Home Instruction Program for Preschool Youngsters) – did undergo an assessment and their details are provided on our website. Issues pertaining to their evidence will also be discussed at later points in this chapter.

Before considering the individual efficacy of these programmes, however, it is worth highlighting the evidence underpinning home visiting interventions more generally. By and large, evaluation studies involving the majority of home visiting interventions suggest that their outcomes are often modest and inconsistent across evaluations. In 1999, the Brookings Institute published a study comparing the efficacy of six home visiting programmes in widespread use across the US and observed that FNP was the only programme to have long-term evidence of improving child outcomes and to have replicated its findings in more than one study.[315] By

[312] Adams, C. (2012). A paper by Cheryll Adams on the History of Health Visiting. Available: hv.org.uk/about-us/history-of-health-visiting/a-paper-by-cheryll-adams/

[313] Kitzman, H. J. (2007). Effective early childhood development programs for low-income families: Home visiting interventions during pregnancy and early childhood. *Encyclopedia on Early Childhood.* Available: http://www.child-encyclopedia.com/sites/default/files/textes-experts/en/794/effective-early-childhood-development-programs-for-low-income-families-home-visiting-interventions-during-pregnancy-and-early-childhood.pdf

[314] Bronfenbrenner, U. (1974). Is early intervention effective? *Day Care and Early Education, 2,* 14–18.

[315] Gomby, D. S. (1999). Understanding evaluations of home visitation programs. *Future of Children, 9*, 27–43.

comparison, the other five home visiting interventions failed to confirm any positive child outcomes and on several occasions, observed negative child outcomes, including an increased risk of child maltreatment.[316]

The Brookings Institute review therefore concluded that much reform was needed to increase the efficacy of home visiting and made the following recommendations:

- The complex nature of home visiting interventions makes them difficult to implement. Home visiting interventions therefore require good systems for ensuring they are delivered with fidelity and to a high standard. These systems include programme manuals, ongoing staff training and clear supervision requirements.
- The majority of home visiting programmes aim to achieve child outcomes through work with the parent. This may not be sufficient for meeting children's educational needs within a relatively short time frame, however. Home visiting may therefore be more effective if it is combined with centre-based activities.
- Some programmes may not be intensive enough. More frequent home visits (two or more times per month) may therefore increase programme effectiveness.
- Many programmes have an insufficiently specified target population. The majority of studies suggest that home visiting is effective only for the most vulnerable families.
- Many outcomes are contingent upon the quality of other community services that are beyond the intervention's control. Hence, outcomes that are linked to the community more generally (e.g. parental access to training and employment, good-quality health care) are vulnerable to external factors.

The findings of the 1999 Brookings Institute study led to many reforms that are reflected in the home visiting programmes available today. These reforms include improved systems for monitoring programme fidelity and greater target population specificity. However, there continues to be huge variation in the benefits home visiting programmes achieve. A recently completed Child Trends systematic review involving 66 interventions observed that only 32 had an impact on a child outcome, 23 had contradictory outcomes and 11 had evidence from a well-conducted study suggesting no benefits to parents or children.[317] Characteristics shared by the most effective interventions included:

1) High levels of intensity – meaning that the programme lasted for a year or longer and averaged four or more visits per month
2) Delivery by Master's-level therapist and/or social worker who taught parents specific skills.

Collectively, these findings suggest that home visiting interventions are a promising form of early intervention, but careful evaluation and monitoring is required to understand how and when they are the most effective.

Early language programmes

In 1995, Hart and Risley published a study that compared low-income, working-class and middle-class parents' use of language with their children through the use of monthly, video-taped observations that tracked children from seven months until the age of three. At the three-year assessment, the researchers observed that the

[316] Gomby, D. S. (2007). The promise and limitations of home visiting: Implementing effective programs. *Child Abuse and Neglect, 31*, 793–799.

[317] Available: http://www.childtrends.org/wp-content/uploads/2005/07/2010-17WWHomeVisit.pdf

children's speech mirrored that of their parents, suggesting that between 86 and 98% of the children's words were derived from their parents' vocabularies. The children's speech patterns and average number of words used during conversation were also strikingly similar to their parents'.

Hart and Risley additionally observed that the total number of words children heard during their first three years varied greatly on the basis of family income. Children with lower-class parents heard approximately 616 words per hour, those from working-class families heard around 1,251 words per hour and those from professional families heard roughly 2,153 words per hour. Hence, by the age of three, middle-class children heard over 30 million more words than lower-income children. Not surprisingly, the vocabulary used by middle-class parents was also much greater, meaning that their children were exposed to many more different words. The study also observed that by the time the three groups reached third grade (age 8) there was also a gap in their school achievement – particularly in terms of their reading comprehension and general language use.[318]

This finding has since been commonly referred to as the 30 million word gap. While many have questioned the magnitude of Hart and Risley's findings, few would argue that the gap does not exist.[319] Studies subsequent to Hart and Risley's have also observed that the gap is already evident at 18 months. For example, a recent study by Fernald and colleagues observed that middle-class toddlers were better able to process vocabulary during a shared book reading activity than were economically disadvantaged children.[320]

Child development experts are quick to point out that the gap is not simply a result of the number of words heard, or an issue of vocabulary, however.[321,322] If this were the case, the gap could be narrowed simply by teaching low-income children words through the use of flash cards. Instead, experts agree that children's early language learning is best supported through parent–child language exchanges that take place on a daily basis.[323,324] It is believed that richer and more varied language exchanges not only increase young children's vocabulary, but also improve the cognitive and memory skills linked to improved reading comprehension when children are older.

One activity thought to reduce this gap is parent–child shared reading activities.[325,326,327] Shared reading is an ideal activity for supporting children's language development because it creates a structured context in which high-quality verbal exchanges can take place. In this respect, age-appropriate picture books provide a solid

[318] Hart, B., & Risley, T. R. (2003). The early catastrophe: The 30 million word gap by age 3. *American Educator, 27*, 4–9. Available: www.aft.org/pdfs/americaneducator/spring2003/TheEarlyCatastrophe.pdf.

[319] Gilkerson, J., & Richards, J. A. (2009). The Power of Talk. Impact of Adult Talk, Conversational Turns and TV during the Critical 0-4 Years of Child Development. Boulder, CO: LENA Foundation.

[320] Fernald, A., Marchman, V. A., & Weisleder, A. (2013). SES differences in language processing skill and vocabulary are evident at 18 months. *Developmental Science, 16*, 234–248.

[321] Rich, M. (2013). Language-gap study bolsters a push for pre-K. *New York Times.* Available: http://www.nytimes.com/2013/10/22/us/language-gap-study-bolsters-a-push-for-pre-k.html?_r=0

[322] Hirsh-Pasek, K., Adamson, L. B., Bakeman, R., Owen, M. T., Golinkoff, R. M., Pace, A., ... & Suma, K. (2015). The contribution of early communication quality to low-income children's language success. *Psychological Science*, 0956797615581493.

[323] Weizman, Z. O., & Snow, C. E. (2001). Lexical output as related to children's vocabulary acquisition: Effects of sophisticated exposure and support for meaning. *Developmental Psychology*, *37*(2), 265–279.

[324] Zimmerman, F. J., Gilkerson, J., Richards, J. A., Christakis, D. A., Xu, D., Gray, S., & Yapanel, U. (2009). Teaching by listening: The importance of adult-child conversations to language development. *Pediatrics*, *124*, 342–349.

[325] Britto, P. A., Fuligni, A. S., & Brooks-Gunn, J. (2006). Reading ahead: Effective interventions for young children's early literacy development. In D. K Dickinsen & S. B. Neuman (Eds.), *Handbook of early literacy research* (pp. 311–332). Guilford, CT: Guilford Press.

[326] Raikes, H., Pan, B. A., Luze, G., Tamis-LeMonda, C. S., Brooks-Gunn, J., Constantine, J., Tarullo, L. B., Raikes, H. A., & Rodriguez, E. T. (2006). Mother–child bookreading in low-income families: Correlates and outcomes during the first three years of life. *Child Development, 77*, 924–953.

[327] Yeo, L., Ong, W. W., & Ng, C. M. (2014). The home literacy environment and preschool children's reading skills and interest. *Early Education and Development, 25*, 791–814.

framework for parents to scaffold their children's language learning.[328] There is also good evidence to suggest that structured reading activities improve lower-income parents' use of language and vocabulary with their children.[329] While differences remain in the ways in which higher- and lower-income parents read to their children, shared reading interventions may potentially reduce these differences.[330]

Programmes that aim to improve preschool children's language development through parent–child interaction have existed since the mid-1960s and fall broadly into one of two categories: 1) family literacy programmes that increase parents' awareness about the benefits of shared book reading and 2) dialogical book reading interventions that teach parents specific skills to use while reading to their child. Family literacy and dialogical book reading programmes may be delivered alongside a classroom-based curriculum, or independently through regular home visiting.

Family literacy programmes

Family literacy programmes range from Universally available book gifting schemes to community-based initiatives that are developed specifically for families living in disadvantaged communities. Although it is clear that many of these programmes are well-liked by parents, evidence confirming their impacts on children is limited.[331,332] This is partially because of huge variability in the kinds of activities family literacy programmes offer which make them difficult to evaluate, but also because many programmes simply have not yet attempted a rigorous evaluation.[333,334]

The few family literacy programmes that have undergone a robust evaluation observe relatively few benefits for children.[335] For example, findings from the Australian trial of the Let's Read book gifting scheme observed no measurable improvements in parents' reading activities or their children's language capabilities immediately upon programme completion or two years afterwards. The authors speculate that the low intensity of the programme (a free book and a demonstration during a health visit at 4, 12 and 18 months) may not have been sufficient for improving outcomes in disadvantaged families.[336,337]

Similarly disappointing findings were observed in the evaluation of the Even Start initiative in the United States. The Even Start programme was launched in the late 1980s to increase the use of books and reading

[328] Bus, A. G., Van IJzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research, 65*, 1–21.

[329] Gilkerson, J., Richards, J. A., & Topping, K. J. (2015). The impact of book reading in the early years on parent-child language interaction. *Journal of Early Childhood Literacy,* 1–19.

[330] Phillips, B. M., & Lonigan, C. J. (2009). Variations in the home literacy environment of preschool children: A cluster analytic approach. *Scientific Studies in Reading, 13*, 146–174.

[331] Sénéchal, M., & Young, L. (2008). The effect of family literacy interventions on children's acquisition of reading from kindergarten to grade 3: A meta-analytic review. *Review of Educational Research, 78*(4), 880–907.

[332] Swain, J., Brooks, G., & Bosley, S. (2014). The benefits of family literacy provision for parents in England. *Journal of Early Childhood Research, 12*, 1–15.

[333] Brooks-Gunn, J., Berlin, L. J., & Fuligni, A. S. (2000). Early childhood intervention programs: What about the family? In J. P. Shonkoff & S.J. Meisels (Eds.), *Handbook of Early Childhood Intervention* (2nd ed., pp. 549–588). New York, NY: Cambridge University Press.

[334] van Steensel, R., McElvany, N., Kurvers, J., & Herppich, S. (2011). How effective are family literacy programs?: Results of a meta-analysis. *Review of Educational Research, 81*, 69–96.

[335] Reese, E., Sparks, A., & Leyva, D. (2010). A review of parent interventions for preschool children's language and emergent literacy. *Journal of Early Childhood Literacy, 10*, 97–117.

[336] Goldfield, S., Napiza, N., Quach, J., Reilly, S., Ukoumunne, O. C., & Wake, M. (2011). Outcomes of a universal infant-toddler shared reading intervention by 2 years of age: The Let's Read Trial. *Pediatrics*, *27,* 444–455.

[337] Goldfeld, S., Quach, J., Nicholls, R., Reilly, S., Ukoumunne, O. C., & Wake, M. (2012). Four-year-old outcomes of a universal infant-toddler shared reading intervention. The Let's Read Trial. *Archives of Pediatrics and Adolescent Medicine, 166*, 1045–1052.

activities in families with a child between birth and age seven living in disadvantaged communities.[338] Even Start sites varied in the range of activities they offered to families, but they typically combined book gifting activities with a classroom-based reading programme. Findings from a rigorously conducted RCT identified no short- or long-term benefits for Even Start participants. The study's authors note that the intensity of Even Start services was much less than what was provided by Abecedarian or Head Start programmes and that programme uptake was generally low. Hence, the limited dose of the Even Start programme may have contributed to its lack of measurable benefits.[339]

Dialogical book reading interventions

The evidence underpinning dialogical book reading interventions is generally positive, although the weaknesses in the design of many of the evaluations limit what can be concluded from them.[340,341] Many of the dialogical book reading interventions in existence today are informed by the original model introduced by Whitehurst and colleagues in the late 1980s.[342] This model provides parents with storybooks that have been carefully chosen to facilitate parent–child interaction during book reading activities. Parents also learn strategies for actively engaging their child in the story through open-ended questions and methods to connect the story to real life events. This is done to increase the child's engagement in the reading activity and help him or her generalise the words and ideas introduced in the story to other contexts. Whitehurst's original model taught these skills to parents through two group-based sessions taking place over a period of six weeks. The programme has since been developed into a video-tape series that parents can access on their own.[343,344]

The reciprocal parent–child exchanges that take place during shared reading are thought to be the key ingredient to their success. For example, longitudinal research with middle-income families has observed that features of shared reading experiences during preschool differentially predict children's reading capabilities when they are in primary school. While exposure to books appears to support children's early vocabulary and listening capabilities, parental instructions during book reading activities contribute specifically to their ability to read in Year 1 and their reading comprehension in Year 2.[345]

[338] Fuligni, A. S., & Brooks-Gunn, J. (2004). Early childhood intervention in family literacy programs. In B. H. Wasik (Ed.), *Handbook of Family Literacy* (pp. 117–136). Mahwah, NJ: Erlbaum.

[339] St. Pierre, R. G., Ricciuti, A. C., & Rimdzius, T. A. (2005). Effects of a family literacy program on low-literate children and their parents: Findings from an evaluation of the Even Start family literacy program. *Developmental Psychology, 41*, 953–970.

[340] Whitehurst, G. J., Arnold, D. S., Epstein, J. N., Angell, A. L., Smith, M., & Fischel, J. E. (1994). A picture book reading intervention in day care and home for children from low-income families. *Developmental Psychology, 305*, 679–689.

[341] Manz, P. H., Hughes, C., Barnabas, E., Bracaliello, C., & Ginsburg-Block, M. (2009). A descriptive review and meta-analysis of family-based emergent literacy interventions: To what extent is the research applicable to low-income, ethnic-minority or linguistically-diverse young children? *Early Childhood Research Quarterly, 25*, 409–431.

[342] Whitehurst, G. J., Falco, F. L., Lonigan, C. J., Fischel, J. E., DeBaryshe, B. D., Valdez-Menchaca, M. C., & Caulfield, M. (1988). Accelerating language development through picture book reading. *Developmental Psychology, 24*, 552–559.

[343] Heubner, C. E., & Meltzoff, A. N. (2005). Intervention to change parent-child reading style: A comparison of instructional methods. *Applied Developmental Psychology, 26,* 296–313.

[344] Whitehurst, G. J., Falco, F. L., Lonigan, C. J., Fischel, J. E., DeBaryshe, B. D., Valdez-Menchaca, M. C., & Caulfield, M. (1988). Accelerating language development through picture book reading. *Developmental Psychology*, *24*(4), 552–559.

[345] Senechal, M., & LeFevre, J. (2002). Parental involvement in the development of children's reading skill: A five-year longitudinal study. *Child Development, 73*, 445–460.

Meta-analytic reviews of dialogical reading programmes observe, however, that their benefits, while significant, are typically modest and more likely to be achieved in white, middle-class families.[346,347] This may be because dialogical reading interventions are typically short and potentially not intensive enough for parents from lower-SES groups to learn and practise all of the teaching strategies. Indeed, one study observed that programme effectiveness was greatest in low-income families when it was delivered through multiple sessions taking place over a period of six months or longer.[348] However, other reviews suggest that length of the intervention is not as important as the extent to which the instruction is explicit. In this respect, interventions that reinforce children's language through explicit instruction embedded in meaningful contexts (e.g. emphasise target words and include specific teaching goals) are likely to be more effective than programmes that promote language use less directly through questions and conversation about the story.[349,350]

The Best Start at Home review identified only two interventions that explicitly teach parents dialogical reading skills. This means that many dialogical reading programmes were likely missed, possibly because of the terms used to systematically search the various databases. For this reason, an additional review of interventions supporting children's early speech and language development has been commissioned and will be completed later this year.

Interventions for children with identified language delays

While the discrepancy in cognitive and language performance between different social groups is a clearly identified concern, it is also true that some children who are not obviously from socially disadvantaged backgrounds can also experience development that is slow relative to their peers.[351] In such cases the 'risk' factors may vary, for example genetic or familial factors will be more salient. Such children may well not be identified through Targeted-Selective interventions because they will simply not be in such selected populations. They may be identified in Universal services which cover the whole population, by other professionals (GPs, teachers, etc.) or through parental referral. These children's needs may be managed within the school setting often with supplementary interventions provided by speech and language therapists. Such Targeted-Indicated interventions have been reviewed elsewhere[352] and are not the primary focus of the present review.

The Best Start at Home review nevertheless identified five Targeted-Indicated interventions that were developed as explicit language instruction programmes for families with a child identified with a language delay. The majority of these programmes coach parents with strategies for engaging their children in conversations that will help them learn and practise new words.

How is the impact of early learning programmes measured?

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[346] Mol, S. E., Bus, A. G., de Jong, M. T., & Smeets, D. J. A. (2008). Added value of dialogic parent–child book reading: A meta-analysis. *Early Education and Development, 19*, 7–26.

[347] Manz, P. H., Hughes, C., Barnabas, E., Bracaliello, C., & Ginsburg-Block, M. (2009). A descriptive review and meta-analysis of family-based emergent literacy interventions: To what extent is the research applicable to low-income, ethnic-minority or linguistically-diverse young children? *Early Childhood Research Quarterly, 25*, 409–431.

[348] Cronan, T. A., Cruz, S. G., Arriaga, R. I., & Sarkin, A. J. (1996). The effects of a community-based literacy program on young children's language and conceptual development. *American Journal of Community Psychology, 24*, 251–272.

[349] Marulis, L. M., & Neuman, S. B. (2013). How vocabulary interventions affect young children at risk: A meta-analytic review. *Journal of Research on Educational Effectiveness, 6*, 223–262.

[350] Reese, E., & Cox, A. (1999). Quality of adult book reading affects children's emergent literacy. *Developmental Psychology*, *35*(1), 20–28.

[351] Roy, P., & Chiat, S. (2013). Teasing apart disadvantage from disorder The case of poor language. Available: http://openaccess.city.ac.uk/4990/

[352] Law, J., Garrett, Z., & Nye, C. (2003). Speech and language therapy interventions for children with primary speech and language delay or disorder. Campbell Collaboration.

Table 10 provides a list of some of the validated measures most frequently used to assess child and parent outcomes associated with children's early learning.

TABLE 10: MEASURES FREQUENTLY USED TO ASSESS PARENT AND CHILD OUTCOMES ASSOCIATED WITH COGNITIVE AND LANGUAGE DEVELOPMENT

Child Early Learning Measures	
Basic Achievement Skills Inventory[353]	A multi-level achievement test that helps measure maths, reading, and language skills in children and adults.
The Bayley Scales of Infant Development[354]	The Bayley Scales of Infant Development are a series of measurements used to assess the development of infants and toddlers, ages 1–42 months. This measures consist of a variety of developmental play tasks taking between 45 – 60 minutes to administer. The scales derive a developmental quotient (DQ) rather than an intelligence quotient (IQ). There are three main subtests; the Cognitive Scale, the Language Scale, and the Motor Scale, which assesses gross and fine motor skills. There are also two short parent report scales involving a social-emotional dimension and infant adaptability.
CPI-R (Cooperative Preschool Inventory-Revised)[355]	The CPI-R is a brief screening test teachers can administer to children between the ages of three and six. It was designed to measure the extent of disadvantage at the time children enter school, so that deficits can be remediated. The CPI-R has 64 items that consider the following four factors: personal-social responsiveness; associative vocabulary; numerical concept activation; and sensory concept activation.
Focus on the Outcomes of Communication Under Six (FOCUS)	FOCUS is a clinical and research tool designed to evaluate change in communicative-participation in children with language and communication delays. There are two versions of the measure, one designed for parents and one for clinicians.
Kaufman Assessment Battery for Children[356]	The Kaufman Assessment Battery for Children is a clinical assessment of children's cognitive capabilities, measuring 18 different subsets of children's problem solving capabilities. It is administered by an educational psychologist and results in a norm-referenced score to provide an estimate of children's cognitive functioning.

[353] Wilson, H. (2008). possibilities.

[354] Bayley, Nancy (2006). "Bayley scales of infant and toddler development: administration manual". Harcourt Assessment (San Antonio, TX)

[355] Powers, S., & Medina, M. (1984). Reliability and validity of the Cooperative Preschool Inventory for English-and Spanish-speaking Hispanic children. *Educational and psychological measurement, 44*(4), 963-966.

[356] Kaufman, A.S., & Kaufman, N.L. (1983). *Kaufman Assessment Battery for Children.* Circle Pines, MN: American Guidance Service.

MacArthur-Bates Communicative Development Index[357]	The MacArthur-Bates Communicative Development Index is a parent report measures which capture important information about children's developing abilities in several domains of early language, including vocabulary comprehension, production, gesture use, and early grammar.
Observation Survey of Early Literacy Achievement (Clay)[358]	The Observation Survey of Early Learning is a systematic method for observing and measuring children's engagement with printed material and reading skills.
Peabody Picture Vocabulary Test[359]	The PPVT is test of children's receptive vocabulary, intended to provide a quick estimate of verbal ability and scholastic aptitude. Trained assessors present children with a series of four pictures to the child. The assessor describes one of the pictures and asks the child to point to or say the number of the picture that the word describes.
Sheffield Early Literacy Profile (SELDP)[360]	The Sheffield Early Literacy Profile measures early literacy development in children between the age of three and five. It samples children's understand in the areas of environmental print, books and early literacy tasks.
The Wechsler Preschool and Primary Scale of Intelligence (WPPSI)[361]	The Wechsler Preschool and Primary Scale of Intelligence-IV (WPPSI-IV) is an intelligence test designed for children between age 2 and 8, involving 14 subtests administered by an educational psychologist.
Parent measures	
Child-Caregiver Observation System (C-COS)[362]	C-COS is a child-focused observation system that captures information about the caregiving environment of children between the ages of one and five. The measure focuses on the kinds of behaviours known to be important for young children, such as the frequency of adult language directed to a child, the overall quality of the parents' engagement with the child and the child's response to the caregiver. Researchers visit parents and children in the home and assess quality of their interaction at regular intervals over a period of two hours.
Home Observation for Measurement of the Environment (HOME) Inventory[363]	The HOME inventory is an observational measure designed to measure the quality and extent of stimulation available in the child's home environment. Three versions are available based on children's age: Infant/Toddler (IT) (birth to 3), Early (3 to 6), and

[357] Heilmann, J., Weismer, S. E., Evans, J., & Hollar, C. (2005). Utility of the MacArthur—Bates Communicative Development Inventory in Identifying Language Abilities of Late-Talking and Typically Developing Toddlers. *American Journal of Speech-Language Pathology, 14*(1), 40-51.

[358] Clay, M. M. (2002, 2005). *An observation survey of early literacy achievement* (2nd ed., rev. 2nd ed.). Portsmouth, NH: Heinemann.

[359] Dunn, L. M., & Dunn, D. M. (2015). Peabody picture vocabulary test: PPVT 4. Pearson.

[360] Nutbrown, C. (1997). Recognising early literacy development: Assessing children's achievements. Sage.

[361] The Psychological Corporation. (2001). Wechsler Individual Achievement Test – Second edition. San Antonio, TX: Author.

[362] Boller, K., & Sprachman, S. (1998). The Child-Caregiver Observation System Instructor's Manual (No. f54a2e767fc94aa281ccf2ee3cc6eb5b). Mathematica Policy Research.

[363] Caldwell, B. M., & Bradley, R. H. (1984). Home observation for measurement of the environment. Little Rock: University of Arkansas at little Rock.

	Middle Childhood (MC) (6 to 10 years). Trained researchers make observations against 45 items during home visits when the child is awake and engaged. The assessment also includes an interview with the parent.
Keys to Interactive Parenting Scale (KIPS) [364]	The Keys to Interactive Parenting Scale (KIPS) is an observational measure used to assess the quality of parenting interactions. Parents are video-taped interacting with their child in the home. Trained researchers then code parents on the following three dimensions: emotional support, language engagement and the extent to which the parent provides supportive instructions to the child.
Parent Play Beliefs Scale[365]	The Parent Play Beliefs Scale is a 32 item parent-report measure designed to reliably assess parents' attitudes towards play and the extent to which they are involved in their children's early play.

Child measures of children's early cognitive development include standardised IQ tests, such as the Wechsler Preschool and Primary Scale of Intelligence (WIPPSI-IV) and the Kaufman Assessment Battery for Children (Kaufman ABC). Both tests provide a norm-referenced score of the child's cognitive function on a variety of dimensions, including their understanding of a variety of concepts and problem solving capabilities. The scores from both of these measures are good predictors of children's cognitive functioning as they grow older. The cognitive functioning of infants and toddlers can be assessed with the Bayley Scales of Infant Development, although their predictive ability is not as high as the Kaufman or Wechsler series tests.

Other assessments of children's early learning include the Peabody Picture Vocabulary Test, which tests children's vocabulary through a series of pictures administered by a trained researcher. Children's use of language and knowledge of words can also be assessed by a variety of parent-report measures such as the MacArthur-Bates Communicative Development Index. Children's early language is also typically assessed through word counts of audio taped speech samples.

Validated measures of the quality of the home environment and parents' support for early learning include the HOME Inventory, which enables structured observations of the home environment by trained researchers. Keys to Interactive Parenting Scale and Child-Caregiver Observation System similarly provided a structured system for assessing parents' support for early learning through the coding of video-taped observations.

Findings

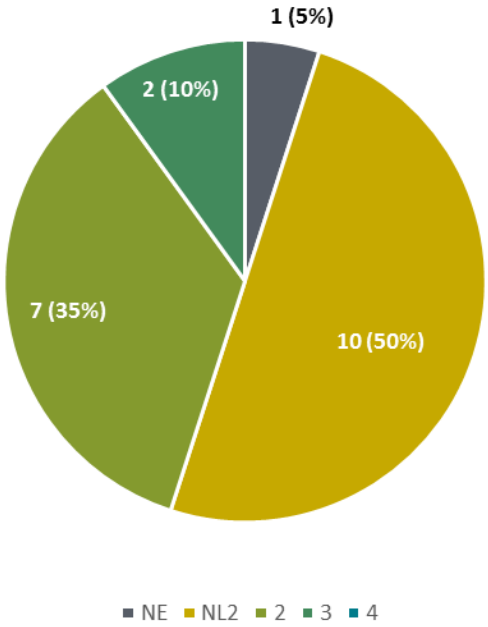
Twenty interventions that support children's cognitive development through parent–child interaction underwent an EIF strength of evidence assessment. These programmes' best evidence involves a range of children's ages, with 6 (30%) involving families with infants, 7 toddlers (25%) and 7 (35%) involving a family

[364] Comfort, M., Gordon, P. R., English, B., Hacker, K., Hembree, R., Knight, C. R., & Miller, C. K. (2008). Keys to Interactive Parenting Scale.
[365] Fogle, L. M., & Mendez, J. L. (2006). Assessing the play beliefs of African American mothers with preschool children. *Early Childhood Research Quarterly, 21*(4), 507-518.

with a preschool child. Figures 50 through 59 provide an overview of the distribution of these programmes in terms of their level of evidence, level of need, delivery model and cost.

Evidence

Figure 50: Cognitive programmes by level of evidence (n=20)



- No interventions had Level 4 evidence
- 2 (10%) were supported by initial evidence from a single RCT
- 7 (35%) received a rating of Level 2 or 2+, meaning they have preliminary evidence from an evaluation involving a pre/post design or a less rigorous QED
- 10 (50%) were rated as NL2
- 1 (5%) had evidence from at least one RCT or systematic review suggesting that the intervention had no effect on any parent or child primary outcome.

These findings suggest two programmes had evidence of improving a child primary outcome from at least one well-conducted RCT. It is important to keep in mind, however, that many of the community-based initiatives originally identified in the Best Start at Home review did not undergo an assessment, meaning that multi-component interventions with better evidence are not represented in this sample.

Classification of need

Figure 51 considers the distribution of these programmes in terms of the level of need they target.

Figure 51: Cognitive programmes by level of need classification (n=20)

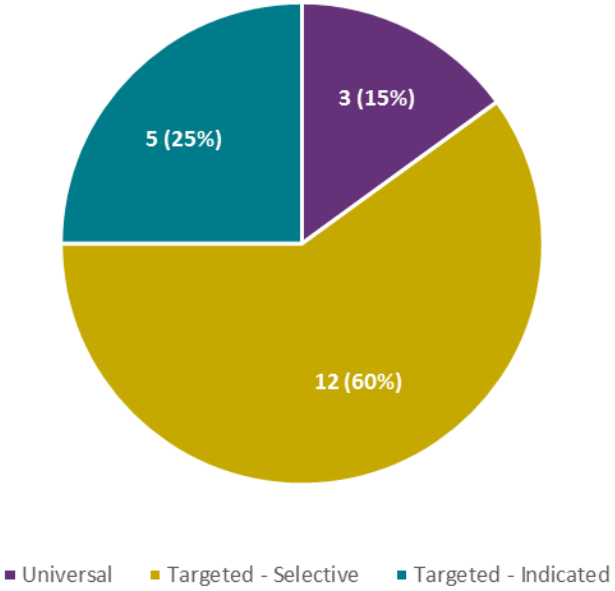
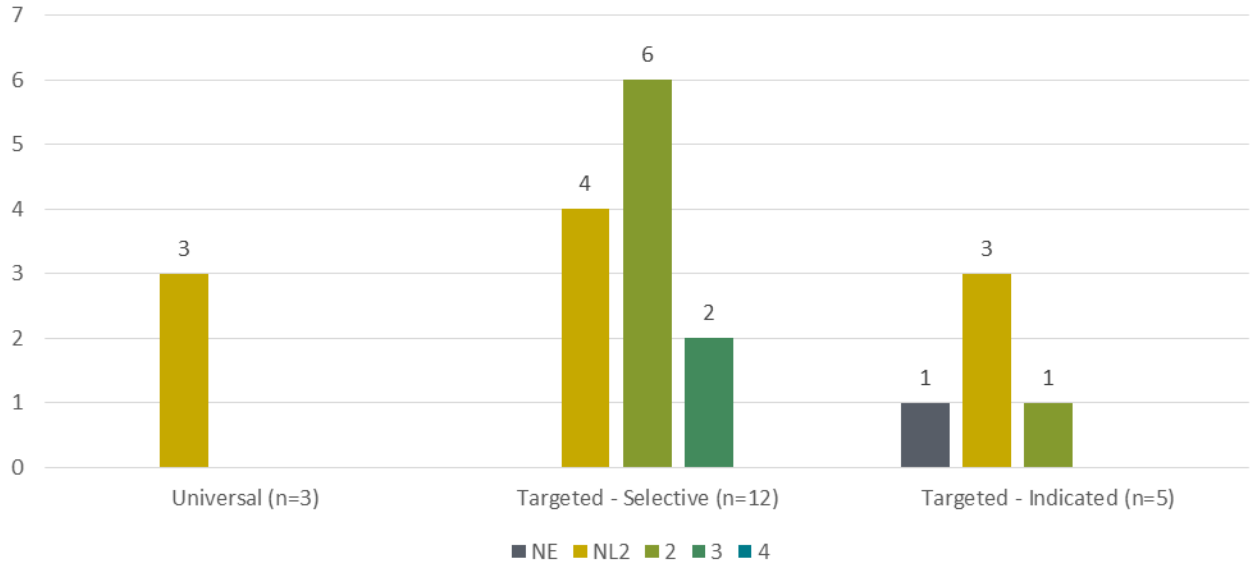


Figure 51 suggests that only 3 (15%) are offered at the Universal level. Just under two-thirds (60%) are offered at the Targeted-Selective level and a quarter (25%) are delivered as Targeted-Indicated interventions to parents with a child who had a pre-identified speech and language problem.

Figure 52 provides an overview of the distribution of evidence within each level of need. Two of the evidence-based cognitive interventions are available as Targeted-Selective interventions.

Figure 52: Distribution of evidence within level of need categories for cognitive programmes (n=20)



Delivery Model

Figure 53 summarises cognitive programmes in terms of their delivery models.

Figure 53: Cognitive programmes by delivery model (n=20)

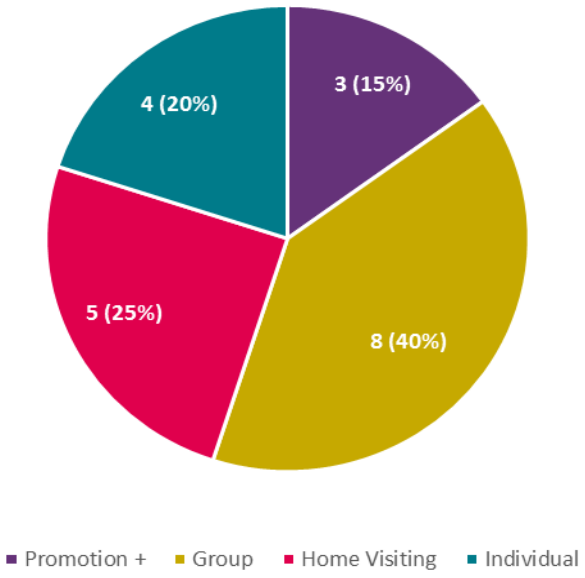


Figure 53 suggests that the largest category of programmes are those delivered to groups of parents.

- 4 (20%) are delivered to families on an individual basis
- 5 (25%) take place through home visiting
- 8 (40%) are offered to groups of parents
- 3 (15%) involve promotional activities such as newsletters and gifting schemes.

Figure 54 summarises the distribution of evidence within the various delivery model categories.

Figure 54: Distribution of evidence within delivery models for cognitive programmes (n=20)

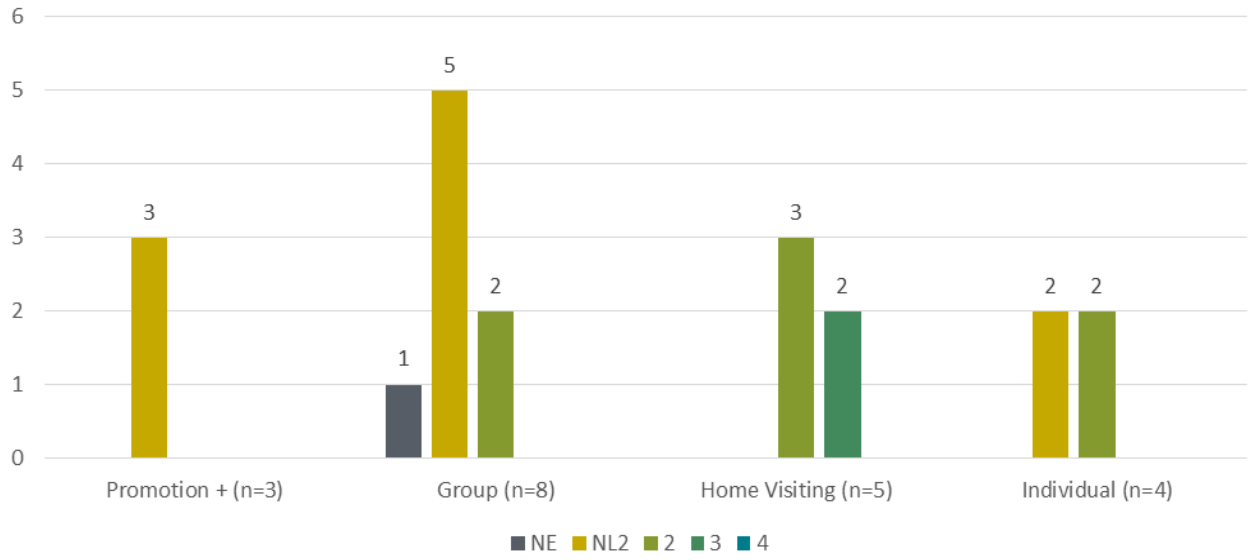
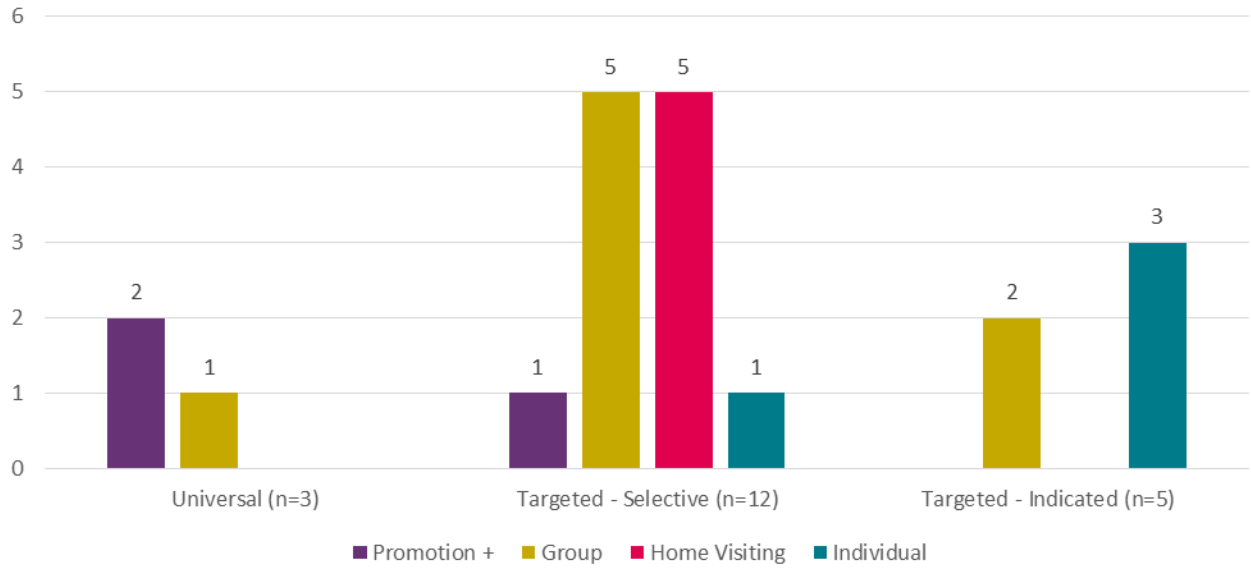


Figure 54 shows that both of the evidence-based programmes are delivered as home-visiting interventions.

Figure 55 considers the distribution of delivery models within each level of need category. The majority of Targeted-Indicated interventions are offered to parents on an individual basis. There is also a much higher proportion of home visiting programmes in the Targeted-Selective category. Universal programmes are delivered exclusively as promotional or group activities.

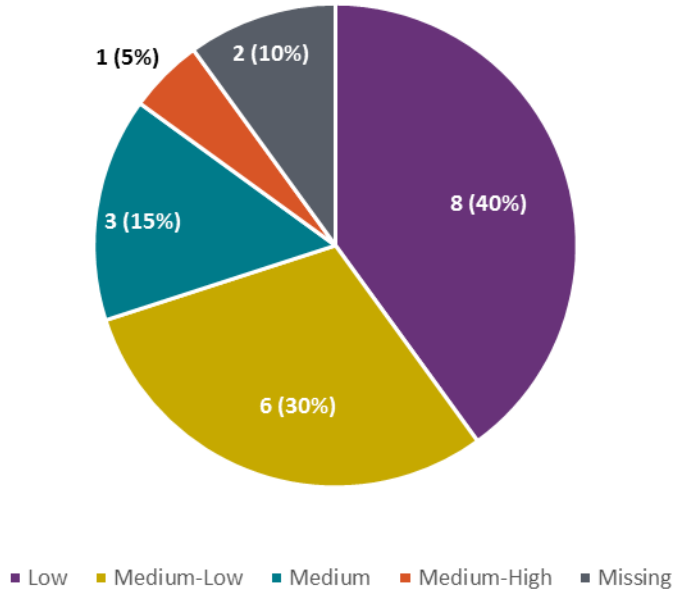
Figure 55: Distribution of delivery model within level of need categories for cognitive programmes (n=20)



Cost

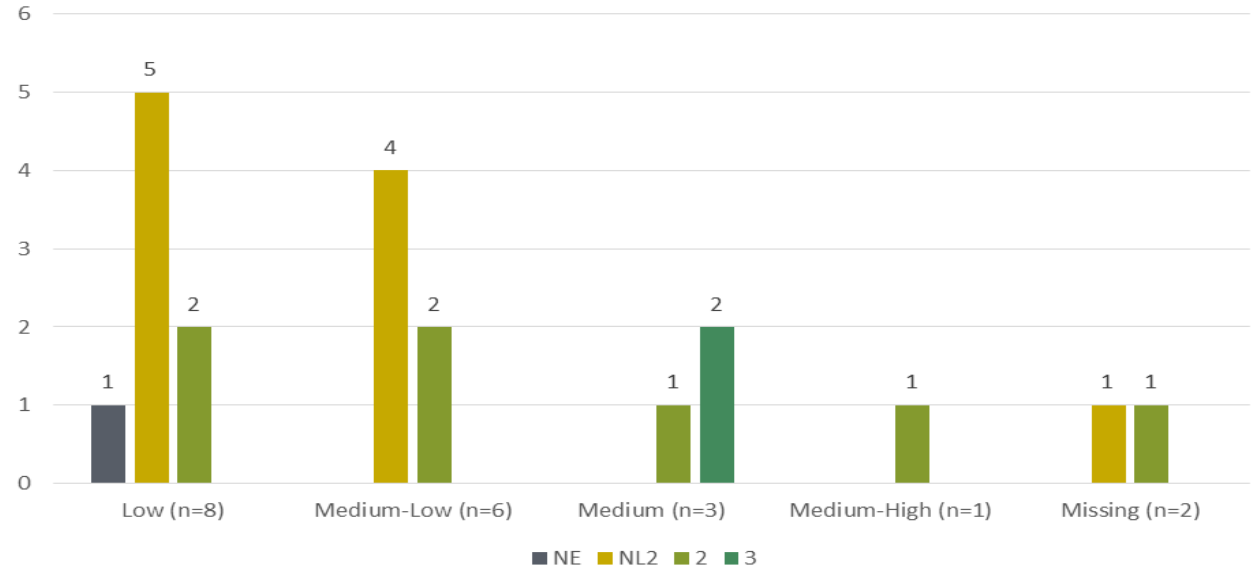
Figure 56 provides an overview of the programmes in terms of their cost.

Figure 56: Cognitive programmes by cost rating (n=20)



As Figure 57 suggests, the majority of programmes are low (8; 40%) to low-medium (6; 30%) cost. Figure 57 provides the distribution of evidence within each of the cost categories.

Figure 57: Distribution of evidence within cost rating categories for cognitive programmes (n=20)



As Figure 57 suggests, the two evidence-based programmes are medium cost, meaning that they range between £500 and £1000 in unit cost. Figures 58 and 59 make clear that the cost of these two programmes reflects the fact that they both are Targeted-Selective interventions delivered to families as home visiting interventions.

Figure 58: Distribution of level of need within cost rating categories for cognitive programmes (n=20)

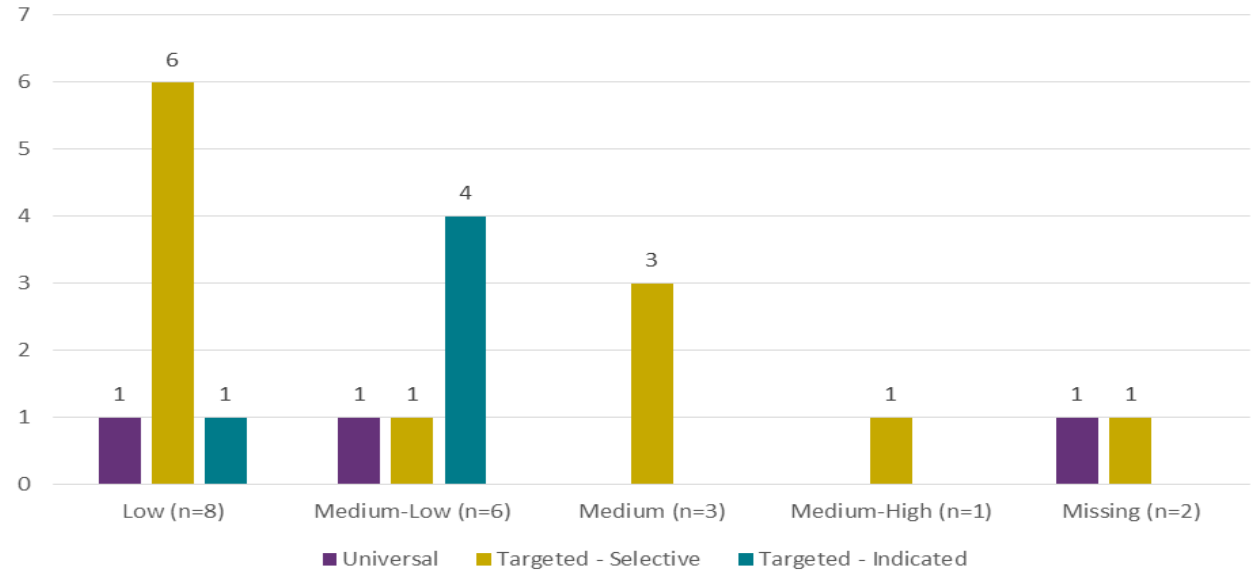
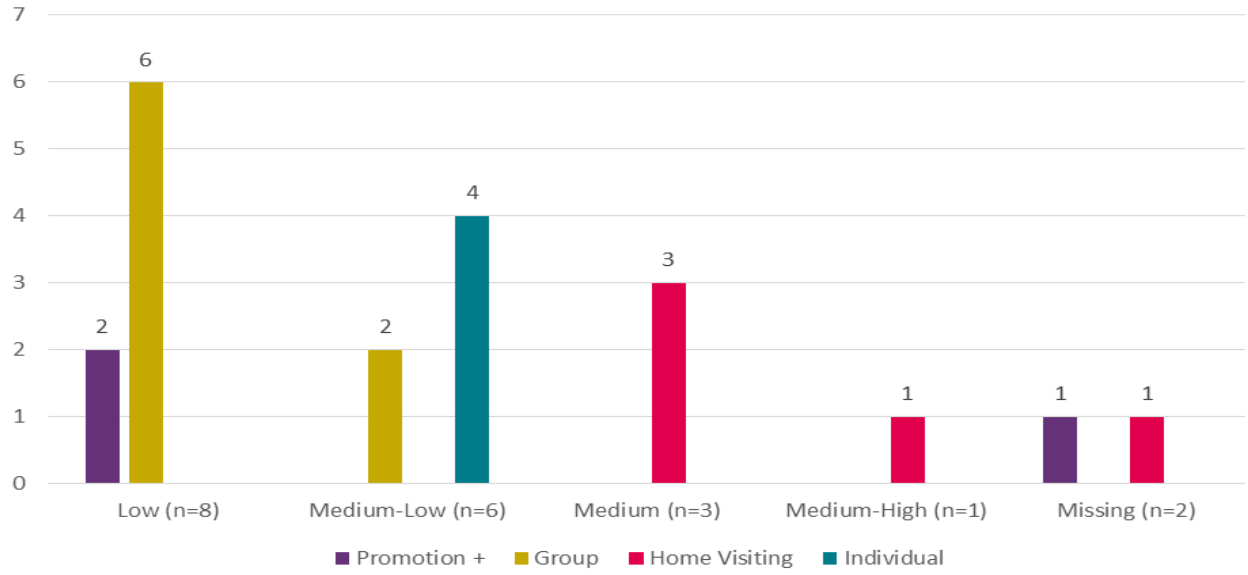


Figure 59: Distribution of delivery model within cost rating categories for cognitive programmes (n=20)



Discussion of the aggregate findings

The aggregate findings suggest that 85% (17) of the early learning interventions identified in this review were either Targeted-Selective or Targeted-Indicated interventions. However, only two could be considered evidence-based with evidence from a Level 3 evaluation. This finding reflects the fact that many evidence-based early learning programmes were not included in this review for the reasons discussed at the beginning of this chapter. These shortcomings will be addressed in future reviews, but they mean that for this exercise, many programmes addressing children's early cognitive and language development are underrepresented.

Both of the evidence-based programmes are similar in that they are offered as home visiting interventions to preschool children living in disadvantaged communities (i.e. Targeted-Selective). The details of both of these interventions are described in the following section.

Evidence-based early learning programmes

In this section we provide four case examples which we believe exemplify the ways in which early learning interventions can improve children's language and cognitive development. All of these programmes are classified as either Targeted-Selective or Targeted-Indicated interventions. Two of these programmes have Level 3 evidence, meaning that they have undergone a single rigorously conducted impact evaluation demonstrating positive primary outcomes for children. One Level 2+ programme, Parents as First Teachers, is also provided as an example of a programme that has steadily improved its evidence through the use of RCT studies. The fourth case example, Let's Learn Language, is included to exemplify the challenges involved in preventing language delay through a community-based risk assessment.

Level 3

REAL

The Raising Early Achievement in Literacy (REAL) programme is a Targeted-Selective intervention designed to support parents to enhance the early literacy development of disadvantaged children. It begins when a child is around 3 years old and then continues for 18 months until entry to formal schooling.

Box A: REAL (Raising Early Achievement in Literacy)

Strength of evidence rating: 3 **Cost rating:** 3

Most consistent child impacts: Improved literacy and letter recognition

Most consistent parent impacts: None measured

Target population:	**Child's age:**	**Level of need:**
Families living in disadvantaged communities	3 to 5 years	Targeted-Selective
Type of programme:	**Setting(s):**	**Who can deliver it?**
Home visiting and group sessions	The family home and school/community group venue	QCF 6 qualified teachers
Country of origin:	**Where implemented?**	**Where evaluated?**
UK	UK	UK

Programme description: REAL aims to improve disadvantaged children's early literacy development by sharing with parents knowledge of early literacy development and practices for supporting their 3–5-year-old children's early literacy skills. Teachers trained in the REAL approach worked with parents on the programme through an average of 5 group sessions and 10 home visits over a period of 12 to 18 months.

REAL's five main components include home visits; provision of literacy resources (particularly books); centre-based group activities; special events (e.g. group library visits); and postal communication between the teacher and child. The programme is based on the ORIM framework (Opportunities, Recognition, Interaction and Models of literacy) and focuses on the following 'strands' of literacy: Books, environmental print, early writing and oral language. Operating within this framework, the programme aims to support parents in enhancing their children's early literacy development through: 1) providing **O**pportunities for literacy activities, 2) **R**ecognising and valuing early literacy achievements, 3) **I**nteracting around literacy, and 4) **M**odelling the use of literacy.

REAL was selected as a case example because it is a Level 3 programme developed in the UK and contains several of the features thought to contribute to programme efficacy described in the earlier part of this chapter. These characteristics include 1) qualified teachers (with QTS) that 2) share with parents strategies for supporting their children's early literacy development through 3) a low-intensity and long-duration programme of home visiting and group work. Contact takes places approximately every three weeks and is sustained for around 18 months. A noteworthy feature of REAL is that it shares knowledge of early literacy development with parents so that they are better positioned to work with their own children on aspects of early literacy (reading together, finding print in the environment, singing nursery rhymes, making early signs and symbols which lead to writing). REAL was developed as a stand-alone intervention, and is now offered alongside or as

part of other early years programmes in many settings. A summary of REAL is provided in Box A. A complete description of its implementation requirements and evidence is provided on the EIF website.

REAL: Cost and impact

REAL is a **medium-cost** programme with a cost rating of 3. Factors contributing to this rating include the fact that it is provided to parents on a one-to-one basis over a period of 18 months by teachers with a QCF Level 6 qualification. Programme impacts include small to moderate improvements in children's early literacy (d = .41) and small but significant improvements in children's letter recognition (d = .30).

Let's Play in Tandem

Let's Play in Tandem is a second Targeted-Selective intervention developed in the UK to improve the early learning outcomes of children living in disadvantaged communities. The programme begins when the child is three years old and continues for a year alongside other children's centre activities. During this time, parents receive home visits from a QCF Level 6 qualified teacher who teaches them strategies for effectively scaffolding their children's early learning and behaviour.

Box B: Let's Play in Tandem

Strength of evidence rating: 3 **Cost rating:** 3

Most consistent child impacts: Improvements in children's inhibitory control and other school readiness skills

Most consistent parent impacts: None measured

Target population:	**Child's age:**	**Level of need:**
Families living in disadvantaged communities	Three years	Targeted-Selective
Type of programme: Home visiting and centre-based	**Setting(s):** The mother's home and group/preschool	**Who can deliver it?** QCF 6 qualified teachers
Country of origin: UK	**Where implemented?** UK	**Where evaluated?** UK

Programme description: Let's Play in Tandem is a school readiness programme for children aged three living in socially disadvantaged communities. It aims to improve children's cognitive development and self-regulation. The programme runs for 12 months, and is typically delivered through Sure Start Children's Centres.

Each family is assigned a project worker who visits the family in the home each week for 90 to 120 minutes. They deliver a pack of three educational activities to develop pre-reading and numerical skills, and promote vocabulary and general knowledge. The activities are demonstrated by the project worker to the family during visits, and are designed to facilitate one-on-one verbal interaction and teach parents key scaffolding skills, including how to prompt, provide instructions and encourage their child. The activities specifically focus on school readiness in terms of children's knowledge (name, address, colours), numeracy, listening and communication.

The Let's Play in Tandem programme is noteworthy because it was developed specifically to be delivered through Sure Start Children's Centres, although it can also be implemented through other preschool settings or on its own. In addition, Let's Play in Tandem is one of the few interventions that explicitly teaches parents scaffolding skills thought to contribute to children's school readiness and executive functioning. Let's Play in Tandem is summarized in Box B and a complete description of its implementation requirements and evidence is provided on the EIF website.

Let's Play in Tandem: cost and impact

Let's Play in Tandem is a **medium cost** programme with a cost rating of 3. This rating is based on the programme's length (12 months) and its delivery through home visits by a QCF Level 6 teacher. While the effect sizes of programme impacts are not available, significant improvements were observed for a variety of school readiness skills, including children's listening and communication skills, writing capabilities, mathematics and prosocial skills, as assed by their teachers with the Four Counties Foundation Phase Profile. Children were also assessed as having improved impulse control through coded observations conducted by researchers who were blind to the fact that the children had participated in the programme.

Level 2 and 2+

The Parents as First Teachers programme was selected as a case study because it is widely available in the UK and provides a good example of how robust evidence can be used to increase programme effectiveness over time.

PAFT was first developed in the United States in the early 1980s to increase disadvantaged families' access to community services and support their role as their child's first teacher.[366] Based on Bronfenbrenner's ecological systems theory, the programme was developed primarily to improve young children's early learning outcomes through home visits that teach parents specific scaffolding skills. Families are eligible if they have a child under the age of three and it continues until the child's third birthday. Additional content is available for families with a child between the ages of three and five. The PAFT programme model is described in Box C and further information about its evidence and implementation requirements is provided on the EIF website.

PAFT was one of the six interventions included in the 1999 Brookings Institute review described previously in this chapter. At that time, PAFT's evidence was not promising. The majority of the findings were not significant, and several primary outcomes favoured the control group.[367] Three years later, PAFT published findings from a second RCT that were even more disappointing.[368] Specifically, the study found that only 9 out of a possible 58 parent outcomes resulted in a small or moderate effect size that was also statistically significant.

These highly mixed results prompted a series of qualitative studies to determine the programme's weaknesses.[369] The process revealed serious issues with the training and supervision of the practitioners delivering the programme and difficulties recruiting and engaging parents. The programme providers therefore redeveloped the programme's content into a manualised curriculum and improved its processes for training and supervising practitioners.

[366] Pfannenstiel, J. C., & Seltzer, D. A. (1989). New parents as teachers: Evaluation of an early parent education program. *Early Childhood Research Quarterly, 4,* 1–18.
[367] Wagner, M. M., & Clayton, S. L. (1999). The parents as teachers program: Results from two demonstrations. *The Future of Children (Home Visiting Program Evaluation), 9*, 91–115.
[368] Wagner, M. M., Spiker, D., & Linn, M. I. (2002). The effectiveness of the parents as teachers program with low-income parents and children. *Topics in Early Childhood Special Education, 22*, 67–81.
[369] Hebbeler, K. M., & Gerlach-Downie, S. G. (2002). Inside the black box of home visiting: A qualitative analysis of why intended outcomes were not achieved. *Early Childhood Research Quarterly*, *17*(1), 28–51.

In 2008, the results of a third RCT were published. Once again, the findings were disappointing. While there were no statistically significant negative outcomes, only one statistically significant positive primary outcome was observed for the entire sample of children: at the 36-month assessment, PAFT children demonstrated improvements on one subscale (task competence) of a mastery motivation measure.[370]

At this point, there was concern that the PAFT curriculum may not be effective, although the study's investigators believed that the lack of more positive findings may have been related to the fact that the study sample had a high proportion of middle-income families in it. Despite these mixed findings, the Canton of Zurich Switzerland selected PAFT as the curriculum for their ZEPPELIN 0–3 project to improve the health and learning outcomes of the city's most vulnerable children.[371] The programme first underwent a feasibility study in 2009 which was then followed by a full-scale RCT in 2011.

Box C: Parents as First Teachers

Strength of evidence rating: 2+ **Cost rating:** 4

Most consistent child impacts: Improved language, behaviour and mastery motivation

Most consistent parent impacts: Increased child acceptance, improved home environment

Target population:	**Child's age:**	**Level of need:**
Families living in disadvantaged communities	0 to 3	Targeted-Selective
Type of programme:	**Setting(s):**	**Who can deliver it?**
Home visiting	The mother's home	QCF Level 6 practitioners
Country of origin:	**Where implemented?**	**Where evaluated?**
USA	USA, UK, Switzerland	USA, Switzerland

Programme description: Parents as First Teachers (PAFT) (also referred to as Parents as Teachers) is for parents with a child aged three and under, typically living in a disadvantaged community. PAFT is delivered to parents individually in their homes and also through optional group meetings. Eligibility starts in pregnancy and can continue until the child's third birthday.

The frequency and duration of PAFT visits are determined by each family's needs. During the visits, practitioners encourage parents to enhance their role as their child's first teacher. Practitioners partner with families to share age-appropriate child development and neuroscience information, helping parents to observe their child's developmental milestones. Practitioners also facilitate parent–child interaction through age-appropriate talk, play and reading activities. They help parents reflect on their parenting, and jointly develop strategies for addressing developmental and behavioural concerns. Family well-being is also addressed during the visits. The aim is to develop family resilience and promote positive parenting behaviours which will persist after the family's engagement with the programme has ended.

The study is still underway, meaning that the outcomes from the final assessment have yet to be confirmed. However, findings from the study's 12-, 24- and 36-month assessments observed consistent improvements in

[370] Drotar, D., Robins, J., Jeavons, L., & Lester Kirchner, H. (2008). A randomized, controlled evaluation of early intervention: The Born to Learn curriculum. *Child: Care, Health and Development, 35*, 643–649.
[371] Neuhauser, A., Ramseier, E., Schaub, S., Burkhardt, S. C., Templer, F., & Lanfranchi, A. (2015). Hard to reach families—A methodological approach to early recognition, recruitment, and randomization in an intervention study. *Mental Health & Prevention, 3*, 79–88.

PAFT children's language capabilities, as measured by the Bayley scales, although it is interesting to note that the magnitude of these effects has decreased over time.

The study has also observed improvements in parent reports of their children's behaviour, as measured by the CBCL and the magnitude of these effects has increased over time. Interestingly, no improvements were observed on a variety of self-reported parenting behaviours. However there were improvements in the observed measures of parenting behaviours – as assessed by the CARE index and the HOME scales.

These findings are much stronger and more consistent than the primary outcomes observed in any of PAFT's previous trials. The programme evaluators attribute this to two factors. First, strict eligibility and recruitment procedures were developed to ensure that the city's most vulnerable families participated in the trial. These recruitment procedures made use of a validated observational screening tool developed by the ZEPPELIN 0–3 project team to identify highly vulnerable expectant parents where there was no previous risk of child maltreatment. The instrument was effective in recruiting 252 families representing 11% of the babies living in Zurich's 14 most disadvantaged communities at that time. Second, the programme was delivered by highly trained and supervised health visitors with previous experience of working with highly vulnerable families. This is a departure from the programme's standard practitioner requirements which recommend a QCF Level 3 if strong supervision is in place.

These findings highlight the extent to which implementation factors can improve programme outcomes. In this example, it is likely that the strict eligibility requirements made sure that the programme was delivered to the families who needed it the most and the increased practitioner qualifications ensured that the programme was delivered to a high standard. They also demonstrate how disappointing findings from one, two or even three RCTs need not be the death knell for a programme model. They are, nevertheless, a clear indication that aspects of the programme's content and delivery need improvement. In this case, greater specification of the programme's target population and increased practitioner qualifications substantially improved programme outcomes.

Parents as First Teachers: cost and impact

Parents as First Teachers is a medium to high-cost programme with a cost rating of 4. This rating is based on the fact that the programme is delivered by QCF Level 6 practitioners, typically for over a period of two years. As described, the programme's impacts have been mixed, with its first several evaluations demonstrating highly mixed findings and relatively few benefits. However, its most recent evaluation has demonstrated consistent improvements in children's language development and behaviour. It should be noted that these improvements were observed when the programme was delivered at a Targeted-Selective level to a highly vulnerable population by highly skilled and supervised practitioners.

No effect

The Let's Learn Language programme was identified as having No Effect (NE) with evidence from one rigorously conducted RCT, which observed no improvements for any of the programme's intended child primary outcomes. It was chosen as a case example because it illustrates the challenges involved in identifying and treating language delay difficulties in toddlers and preschool children. The programme details are summarised in Box D and further details about its delivery requirements and evidence are provided on our website.

Twenty-four months marks the time when language delays are first reliably apparent.[372] Research suggests that increased speech and language support can substantially help young children identified as at risk of experiencing delays. However, knowing when to accurately identify and treat language difficulties remains a challenge.[373] While the majority of children outgrow language problems, it is difficult to determine who will and will not.[374]

Let's Learn Language was originally developed as a means for improving the outcomes for toddlers who demonstrate signs of being at risk for a language delay at 18 months. The programme aimed to accomplish this through a community-based assessment exercise which identified children as being eligible if they scored at or below the 20th percentile on a validated measure of expressive vocabulary. Eligible children then attended a six-week programme where they received support for their language skills through an enriching preschool environment. During this time, their parents attended group sessions where they learned strategies for supporting their children's language acquisition.

Box D: Let's Learn Language

Strength of evidence rating: NE **Cost rating:** 1

Most consistent child impacts: None observed

Most consistent parent impacts: None observed

Target population:	**Child's age:**	**Level of need:**
Children at risk for a language delay	18 months	Targeted-Indicated
Type of programme:	**Setting(s):**	**Who can deliver it?**
Group	Community setting	QCF Level 4/5 Speech and Language Therapists
Country of origin:	**Where implemented?**	**Where evaluated?**
Australia	Australia	Australia

Programme description: Let's Learn Language was an Australian community-based programme targeting toddlers at risk of language delay, originally based on the Hanen 'You make the difference' model. Eighteen-month-old children were assessed for the potential of having a language delay and referred into a six-week intervention led by three interventionists (two psychologists and one speech and language therapist). Groups of three to eight parents attended a 90-minute session where they learned strategies for supporting their child's language while their children engaged in enriching activities in a separate room. During the last half hour, the children were reunited with their parents and video-tapes were made of the parents interacting with their child. Segments of these video-tapes were then used to illustrate positive methods of parent–child interaction in the following session.

The study observed that while the programme was well attended and liked by parents, no improvements in children's language were observed. The authors speculate that the intervention may have failed because 18 months may be too early to accurately detect language difficulties. The authors also speculate that a six-week

[372] Rescorla, L. (1989). The language development survey: A screening tool for delayed language in toddlers. *Journal of Speech and Hearing Research, 54*, 587–599.
[373] Shonkoff, J. P., & Phillips, D. (2000). *From Neurons to Neighbourhoods: The Science of Early Childhood Development.* Washington, DC: National Academy Press.
[374] Rescorla, L., & Schwartz, E. (1990). Outcomes of specific expressive delay (SELD). *Applied Psycholinguistics, 11*, 393–408.

intervention may not have been sufficient. The authors conclude that the intervention may be more effective if children were identified at a later point in their development and received treatment through a more intensive intervention.

Let's Learn Language: cost and impact

The cost rating for Let's Learn Language is 1, meaning it is **low cost** to deliver and implement. However, the evaluation authors caution that investing in population-based programmes with evidence of not working would be unwise, as the money would be better spent in researching assessment practices and programmes with greater likelihood of working.

Summary of key messages

This chapter considered interventions that support children's early learning through parent–child interaction. The first part of the chapter reviewed findings from a number of large-scale, community-based initiatives originally identified in the Best Start at Home review. These programmes did not undergo an EIF assessment, but are discussed in this chapter because their findings have implications for improving early learning outcomes for disadvantaged children more generally.

Many of these programmes were originally developed in the United States to support the cognitive development of children living in disadvantaged circumstances. Model programmes such as Perry Preschool, Abecedarian and Head Start originally confirmed significant and sometimes dramatic short-term improvements in children's intellectual skills, followed by long-term improvements in their health and employment. These benefits form the basis of the majority of the economic estimates used to make the case for early intervention and inform the development of many of the programme models that are in existence today.

Lessons from the US based initiatives emphasise the need for interventions that are comprehensive and delivered by trained and supervised staff for one year or longer. While it is clear that these kinds of community initiatives typically provide little value for middle-income families, they do have the potential to provide significant and enduring benefits for children who are less well-off.

The second half of this chapter summarised the findings from the strength of evidence and assessments. Only two of the programmes identified in this review had robust evidence of improving child primary outcomes. There are a number of reasons relatively few of the interventions targeting children's cognitive development lack a strong evidence base. These reasons include the fact that interventions that aim to increase parents' involvement in their children's learning are frequently under-evaluated in comparison to programmes targeting children's mental health.[375] However, it is also clear that the review identified very few programmes which target language delay in children, regardless of whether or not they were socially disadvantaged. This is likely because of the search terms used in the original systematic review. Plans are therefore under way for a subsequent review that will consider the evidence for speech and language programmes more explicitly.

The two programmes with RCT evidence of improving children's learning primary outcomes were then described. Both of these programmes exemplify the principles identified in the first part of the chapter. Both programmes target children who are at risk of low achievement, because of either their socio-economic circumstances or an identified language delay. Both are also delivered for a period of a year or longer and

[375] Gorard, S., & See, B. H. (2013). Do parental involvement interventions increase attainment? A review of the evidence. Available: http://dro.dur.ac.uk/13108/1/13108.pdf

could easily be integrated into a high-quality preschool curriculum that would additionally support children's early learning.

The PAFT programme also has evidence of improving children's early language and behaviour in socially disadvantaged populations. PAFTs evaluation history demonstrates how these outcomes are best achieved if the programme is delivered by highly trained and supervised staff to families who are identified as vulnerable. These positive outcomes also emphasise the potential of home visiting programmes for supporting the early learning of children living in deprived circumstances. This point is further exemplified by the improvements observed in children's early language in the FNP and Child First programmed described in Chapter 4. From this perspective, this report has in fact identified five interventions with Level 3 evidence or higher of improving children's learning if the cognitive outcomes of FNP and Child First programmes are also taken into account.

It is noteworthy that none of these early learning interventions are low cost. These findings are consistent with messages from the broader literature suggesting that improvements in children's early learning can be achieved, but there are clearly no quick fixes. The implications these findings have for the commissioning and implementation of early interventions will be discussed in the last chapter.

Evidence-based cognitive development programmes at a glance

Universal:	No Universal interventions were assessed as having Level 3 evidence. This is partially because very few programmes had sufficiently robust evaluation evidence, but also because the needs of most families are sufficiently addressed through services that are already universally available, which include health visiting, preschool and day care.
Targeted-Selective:	**The Raising Early Achievement in Literacy (REAL) programme** aims to support the language development of three-year-old children living in disadvantaged communities. It has **Level 3** evidence of improving children's pre-literacy skills and letter recognition.
	The **Let's Play in Tandem** programme aims to improve the school readiness skills and development of executive functions of three-year-old children living in disadvantaged communities. It has **Level 3** evidence of improving a variety of school readiness skills and children's inhibitory controls.
	The **Parents as First Teachers (PAFT)** programme aims to support the early learning of children between the ages of 0 and 3 living in disadvantaged communities. It has **Level 2+** evidence because of mixed findings across a series of rigorously conducted RCTs. Findings from its most recent study conducted in Zurich, Switzerland have observed consistent improvements in children's early language when delivered by highly qualified and supervised health visitors working with the city's most disadvantaged children.
No Effect:	**Let's Learn Language** was developed to reduce the likelihood of language delay problems in 18-month-old children identified as being at risk through a universal screening tool. A rigorously conducted RCT observed that the programme had **no effect** in reducing the onset of language delay in at-risk children. This is likely because language delay is difficult to reliably detect before the child is two years old and also because the programme's dose was not sufficiently intense.

Chapter 7

Aggregate findings

1. *There are a range of effective programmes, differing by approach and rationale.*
There are a good number of well-evidenced programmes that if carefully commissioned are likely to be effective. There are a wide range of ways in which developers are working out how to achieve valuable outcomes for different types of beneficiaries using increasingly well-specified components. There are also a number of promising approaches that are based on firm scientific principles but have not yet been tested in terms of impact or benefit for participants.

We provide alongside this report a detailed description of every programme that has preliminary evidence of impact, or rigorous evidence of no effect. This is provided in the Programme Reports on the EIF website.

Implication. We urge commissioners to engage in this detailed material to consider the fit of programmes to their local populations and resources. The EIF and other evidence clearing houses provide detailed advice and guidance on how to access and interpret this material.

2. *Although the case for early intervention is very well made, the overall evidence base for the programmes available now in the UK needs further development.*
This is not a comment on any one programme but on the field as a whole. It is inappropriate to draw strong conclusions about which programmes will work or will not work when each programme only has a small number of evaluations and few have very rigorous or long-term evaluation across multiple sites. More high-quality evaluation is needed if the field is to become a widespread and sustainable source of benefits for children and families and of savings for public agencies.

Implication. Alongside continued investment in well-evidenced or promising early intervention programmes and activities there should be continued investment in evaluation and in learning about how to evaluate. The EIF and other What Works Centres and evidence organisations such as NESTA, ORACLE, Dartington SRU, New Philanthropy Capital and others provide a range of means to help providers and developers evaluate and learn about how to improve impact. However, the step change in evaluation required cannot be delivered solely by providers and the voluntary sector. Local Authorities and Government must play a greater role in supporting and enabling evaluation of early intervention.

3. *Overall, the evidence is strongest for programmes that target based on early signals of risk in child development (Targeted-Indicated).*

There are a number of early signals of risk during children's early development involving children's attachment security, behavioural self-regulation and early learning, to which early intervention programmes can effectively respond.

This does not mean that universal programmes or programmes that target on the basis of demographic factors are ineffective. It is important to remember that our sample of programmes is partial and that the evidence of impact is relatively immature. The commissioning of programmes should depend on an assessment of local need and purpose and on the feasibility of high-quality implementation. We are not suggesting that universal provision is ineffective or unnecessary, nor are we saying that targeting within universal services is not necessary. Nonetheless, the particular benefit of targeting and shaping programmes on the basis of early signals of risk during child development is an important emerging hypothesis that will be further tested as the sample is broadened and further work undertaken.

Implication. We encourage local Councils and others such as the NHS and CCGs to improve understanding among their workforces of development and the measurement of early signals of risk and use these indicators to better respond to risk. By framing early intervention as the response to early signals of risk to child development commissioners can draw on the wide range of available programmes and link the response to the observed issues in development. The evidence is that this more targeted approach will prove more effective than more generic and universal whole population approaches which are not specific to observed needs.

4. Available programmes which focus on children's early behavioural self-regulation tend to have better evidence of effectiveness than those focused on attachment or cognitive development. This does not mean that attachment or cognitive development programmes are ineffective. More and better evaluation is required across all of these outcome domains.

Implication. The greater availability of evidence-based approaches to improving behaviour means that they are better prepared for replication and taking to scale. There is a particular need for continued support for the development and evaluation of approaches that support home learning and early attachment which are also crucial domains of child development.

Findings by primary outcome

Findings on programmes aiming to improve attachment

In assessing programmes that support parent–child interactions with a primary outcome of attachment we have found:

- 5 programmes (18%) with good evidence (Level 3 and 4 Evidence) of improving children's attachment security or attachment-related behaviours.
- 21 of the programmes assessed by EIF (75%) which aim to improve attachment are yet to test effectiveness using high-quality impact evaluation designs (Level 2 and NL2). Of these, 6 programmes have preliminary evidence that they may be effective (Level 2). A further 15 have not been tested for impact (NL2), but many are based on sound science and implementation design and need further testing.

More generally, we have found that:

- Attachment security is a very important feature of child development. Programmes that can help enhance attachment have demonstrated substantial reductions in important risks for vulnerable children.
- Attachment security can be difficult to measure, develops early in life and can change through childhood. Therefore programmes can find it difficult to demonstrate impact. However, some have done so and there are evidence-based examples at all 3 of the levels of need considered.
- Four out of the five evidence-based attachment programmes were relatively high cost, involving frequent contact with vulnerable families for a period of a year or longer.
- However, these programmes are also relatively high impact, with evidence of improving attachment security, children's early language and reducing child maltreatment.

Findings on programmes aiming to improve behaviour

In assessing programmes that support parent–child interactions with a primary outcome of behaviour we have found:

- 10 programmes (37%) with good evidence in improving children's behaviour (Level 3 and 4 Evidence).

- Of the programmes assessed 15 (56%) are yet to test effectiveness in depth (Level 2 and NL2). Of these, 5 programmes have preliminary evidence that they may be effective (Level 2). A further 10 have not been tested for impact (NL2), but many are based on sound science and implementation design and need further testing.

More generally, we have found that:

- There are a number of programmes with good evidence of improving children's behaviour.
- Their best evidence involves families with a noncompliant child aged 2 or older. Noncompliant child behaviour is a normal part of toddler development. Most children outgrow this by the time they are 3, but some children continue to show problems after age 3. Parents with a noncompliant 3-year-old child often want and need more help.
- When well targeted, these programmes can keep problems from becoming worse and improve the parent–child relationship. There is less evidence for the effectiveness of programmes that aim to prevent problems emerging in the first place.
- Evidence-based programmes to enhance behaviour tend to be relatively low cost, often based on group activity and of relatively short duration (in comparison to other programmes in this review).
-

Findings on programmes aiming to improve cognitive development

In assessing programmes that support parent–child interactions with a primary outcome of cognitive development we have found:

- 2 programmes (10%) with good evidence of improving cognitive development (Level 3 and 4 Evidence).
- 17 of these programmes (85%) are yet to test effectiveness in depth (Level 2 and NL2). 7 programmes have preliminary evidence that they may be effective (Level 2). A further 10 have not been tested for impact (NL2), but many are based on sound science and implementation design and need further testing.

More generally, we have found that:

- Social disadvantage is consistently linked to gaps in young children's cognitive and language development.
- The best evidenced programmes to improve cognitive development are the well-known US programmes such as Abecedarian and HighScope that have been evaluated over long periods but are not readily available in implementable form in the UK.
- Within the domain of cognitive development the review had a particular focus on language and communication skills. The sample was relatively weak on identification of cognitive development programmes and so conclusions must be cautious.
- The evidence base for the programmes we have identified is relatively weak, although there are well-evidenced interventions. This is surprising given the importance of the home environment to child cognitive development, the importance of cognitive development to school success and life chances and the considerable investment that has occurred over recent decades. It is clearly an important area for innovation, evaluation and development.
- As children start childcare and enter preschools these settings make substantial contributions to cognitive and social and emotional development and it is important there is good interaction between these settings and parents and carers that recognises the contribution of each.
- The interventions with good (Level 3) evidence of being effective are medium cost, reflecting the fact that they are delivered to families individually over a period of a year or longer.
- These features are consistent with the best evidence from the US programmes, although it is also clear that parenting interventions do not fully replace the need for centre-based provision for young children living in disadvantaged circumstances.

Next steps

Dissemination and learning

This review was developed to inform the commissioning of early years services locally. Commissioners of local children's, maternity and public health services have a critical role in using evidence about what has been shown to be effective in developing services. EIF will be working with both sector organisations and commissioners and service leaders to communicate and disseminate the findings from this review and support use of this evidence. We'll be keeping the EIF website updated with forward plans on opportunity to work with us and engage further with the findings of this review.

Maintenance and further analysis

We have gathered a considerable body of evidence to inform the ratings and analysis from this review and now publish findings based on the summary of the evidence to date. This evidence will continue to change and evolve and programmes will also continue to change and adapt so it is vital that there are opportunities to update the advice to commissioners and policy makers. The Early Intervention Foundation has committed to continuing to review this evidence and to provide an update in roughly 12 months' time. That maintenance of the evidence base is important because in allowing for change we can recognise the progress made over the intervening period.

Impact. As stated above this review has identified a set of programmes available to commissioners in the UK that are evidence-based in the sense of having achieved observable and substantive benefits for children from rigorous evaluation studies. This assessment has enabled EIF to develop a database of studies that have sufficient reliability to form the basis of analysis of impact. Analysis of these impacts will be carried out over the next few months leading to a further report on cost effectiveness.

Consolidation. This review summarises assessment of the evidence underpinning an important set of programmes. Other forms of evidence exist and are also important in advising practitioners, commissioners and policy makers. In the months ahead we will develop guides that consolidate the evidence from this review with related evidence from the Healthy Child Programme and other sources such as related What Works Centres and other systematic reviews.

Signals of risk. One of the headline findings of the review is that programmes that address identified issues in child development tend to have greater evidence of effectiveness than programmes that are more universal or are targeted on the basis of family and contextual risk. We will also report later this year on what measures exist to best assess or identify risk, so as to provide advice to local Councils and others about how to identify the trends in development that signal a need for early intervention.

Guidebook

The Early Intervention Foundation website hosts an online Guidebook with a Programmes Library which was created in 2014 to provide an accessible overview of the evidence. It currently contains information on 50 programmes chosen from 15 authoritative clearinghouses (for more details please see the EIF website). We did not revalidate the ratings of these clearinghouses but presented this evidence within a single framework of standards of evidence as a first step in our work as a What Works Centre.

This current review represents a substantial step in that the EIF has directly assessed the evidence on these 75 programmes. Later this year a subset of the programmes from this review will be added to the Guidebook as will programmes from other reviews. We will also upgrade the Guidebook so it provides clearer advice about the meaning of the evidence standards and about how to improve evidence, and with more ways for programmes to be registered.

Discussion of implications

Improving commissioning

We hope that this report will be useful to any policy maker, practitioner, provider, parent, writer and/or child who is interested in the nature of the evidence for early intervention of this type. However, this evidence has been summarised with the commissioners of programmes as a specific intended audience with the express purpose of providing advice to improve the nature of investment in early intervention in local Councils and agencies in England. The recommendations and implications for commissioners are set out in a Commissioners Guide on our website.

We make a number of specific recommendations, asking that commissioners:

- Use this evidence to inform spending decisions
- Consider this evidence alongside wider factors such as population need and local context
- Develop clear and consistent approaches to assess risks across the early years system for children at key stages of development
- Support the development of a 'test and learn' culture of evidence use
- Support the development of the UK evidence base for early intervention.

Improving evaluation and monitoring

This report has found a high-quality set of programmes available to UK commissioners to support the quality of parent–child interactions in the early years. If investment follows we can be optimistic that these programmes, together with other programmes, services and relationships that provide support in later periods of childhood, can transform the life chances of disadvantaged children and communities.

Although there are well-evidenced programmes the field cannot afford to rest on its laurels, nor is it doing so. There are four areas in particular in which we have found gaps in evidence and knowledge that will have to be addressed if the business case for the opportunities provided by this sort of early intervention is to be strong and watertight. In particular:

- There are not enough studies with long duration, able to track impact over extended periods through childhood and into adulthood;
- There are too many studies that are reported badly with lack of clarity on methods and on impact achieved;
- There is not enough evaluation in the UK, able to assess the relevance of findings from one location for another. Too many programmes operating in the UK are based on evidence from other locations;
- There is not enough evaluation of business as usual. It's not just about programmes; existing practices need better evaluation, learning from the best programmes and testing what works in the practices of health visitors for example.

The challenge of improving the evidence base is the responsibility of everyone involved in early intervention, of commissioners, providers and practitioners, all must contribute. The EIF aims to describe the evidence in a common framework and support the use of this evidence, but it is how the evidence is used and built on that will determine whether stronger business cases and greater impact can be achieved. This requires local and national government, the voluntary sector and other agencies to make progress in evaluation and in their understanding of how to use evaluation evidence.

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Annex 1

Members of the Evidence Panel and expert support to moderation of ratings

Subpanel members

Panel Member	Description	Role
Dr Vashti Berry	Senior Research Fellow, University of Exeter	External expert
Dr Nick Axford	Darlington Social Research Unit	External expert
Prof Jacqueline Barnes	Professor, Birkbeck	External expert
Kirsten Asmussen	EIF Analyst	EIF lead assessor
Jack Martin	EIF Research Officer	EIF assessor
Christine Bradley	Associate EIF analyst	EIF assessor
Prof Kathy Sylva	Professor: University of Oxford	External expert; panel member
Prof Paul Montgomery	Professor: University of Oxford	External expert
Prof Tracey Bywater	Professor, University of York	External expert
Leon Feinstein	Director of Evidence (Chair of panel)	EIF assessor

Note: This table names the experts who were involved in the initial assessment of ratings, subject to final moderation.

Panel members for the moderation meeting

Panel Member	Description	Role
Prof Kathy Sylva	Professor in, University of Oxford	Panel member
Dr Nick Axford	Darlington Social Research Unit	EIF external assessor
Dr Vashti Berry	Senior Research Fellow, University of Exeter	EIF external assessor
Prof Stephen Scott	Professor, King's College	Panel member
Prof James Law	Professor, Newcastle University	Panel member
Prof Gordon Harold	Professor, University of Sussex	Panel member
Prof Jacqueline Barnes	Professor, Birkbeck	External expert
Prof Vivette Glover	Professor, Imperial College	Panel Member
Richard White	Research Manager, National Foundation for Educational Research	Panel Member
Prof David Farrington	Professor, Cambridge University	Panel Member
Prof Ann Phoenix	Professor, UCL, Institute of Education	Panel Member
Prof Jane Barlow	Professor, University of Warwick	Panel Member

Note: This table names the experts who were involved in the moderation of ratings. Final judgements are the responsibility of Kirsten Asmussen as lead author of the review and Leon Feinstein as EIF Head of Evidence.

Annex 2

Detailed criteria for the Strength of Evidence rating

4	**Effectiveness.** A programme with evidence from at least two high-quality evaluations (RCT/QED) demonstrating positive impacts across populations and environments lasting a year or longer. The evidence may include significant adaptations to meet the needs of different target populations. The evidence must meet the following requirements: • The intervention has demonstrated consistent significant positive child outcomes in two rigorous evaluations (RCT/QED) meeting all criteria required for Level 3. • At least one evaluation uses a form of measurement that is independent of the study participants. In other words, self-reports (through the use of validated instruments) might be used, but there is also assessment information independent of the study participants (e.g. an independent observer, administrative data, etc.) • There is evidence of a long-term outcome of 12 months or more from at least one of these studies. To achieve a **4+** rating: • All of the criteria for level 4 must be met. • At least one of the effectiveness evaluations will have been conducted independently of the programme developer. • The intervention must evidence of improving EIF child outcomes from three or more RCTs conducted within real world settings.
3	**Efficacy.** A programme with evidence from at least one rigorously conducted RCT/QED demonstrating a statistically significant positive impact on at least one child outcome. The evidence must meet the following requirements: • The evaluation must meet the requirements for a Level 2. • Participants are randomly assigned to the treatment and control groups through the use of methods appropriate for the circumstances and target population, OR sufficiently rigorous quasi-experimental methods (e.g. regression discontinuity, propensity score matching) are used to generate an appropriately comparable sample through non-random methods. • Assignment to the treatment and comparison group is at the appropriate level (e.g. individual, family, school, community). • An 'intent-to-treat' design is used, meaning that all participants recruited to the intervention participate in the pre/post measurement, regardless of whether or how much of the intervention they receive, even if they drop out of the intervention (this does not include dropping out of the study – which is then regarded as missing data). • The treatment and comparison conditions are thoroughly described. • The extent to which the intervention was delivered with fidelity is clear. • The comparison condition provides an appropriate counterfactual to the treatment group. • There is baseline equivalence between the treatment and comparison-group participants on key demographic variables of interest to the study and baseline measures of outcomes (when feasible). • Risks for contamination of the comparison group and other confounding factors are taken into account and controlled for in the analysis if possible.

	• Participants are blind to their assignment to the treatment or comparison group. (Only a binding criteria if feasible.) • There is consistent and equivalent measurement of the treatment and control groups at all points when measurement takes place. • Differences between study drop-outs and completers are reported if attrition is greater than 10%. • The study assesses and reports on overall and differential attrition. • Measurement is blind to group assignment. • Statistical models control for baseline differences between the treatment and comparison groups in outcome measures and demographic characteristics that might be apparent after recruitment. • The treatment condition is modelled at the level of assignment (or deviations from that strategy are justified statistically). • Appropriate methods are used and reported for the treatment of missing data. • The findings are of sufficient magnitude to justify further analysis. (Not yet assessed in pure cost-effectiveness terms.) To achieve a **3+** rating: • The programme will have obtained evidence of a significant positive child outcome through an efficacy study, but may also have additional consistent positive evidence from other evaluations (occurring under ideal circumstances or real world settings) that do not meet this criteria, thus keeping it from receiving an assessment of 4 or higher.
2	**Preliminary.** A programme with evidence of improving a child outcome from a study involving at least 20 participants, representing 60% of the sample using validated instruments. The evidence must meet the following requirements: • Participants complete the same set of measures once shortly before participating in the programme and once again immediately afterwards. • The sample is representative of the intervention's target population in terms of age, demographics and level of need. The sample characteristics are clearly stated. • The sample is sufficiently large to test for the desired impact. A minimum of 20 participants complete the measures at both time points within each study group (e.g. a minimum of 20 participants in pre/post study not involving a comparison group or a minimum of 20 participants in the treatment group AND comparison group). • The study has clear processes for determining and reporting drop-out and dose. • A minimum of 35% of the participants complete pre/post measures. This means that overall study attrition is not higher than 65%. In the case of pre/post studies, the sample represents 60% of the original participants. • The measures are appropriate for the intervention's anticipated outcomes and population. • The measures are valid and reliable. This means that the measures are standardised and validated independently of the study and the methods for standardisation are published. Administrative data and observational measures might also be used to measure programme impact, but there is sufficient information to determine their validity for doing this. • Measurement is independent of any measures used as part of the treatment. • The methods used to analyse results are appropriate given the data being analysed (categorical, ordinal, ratio/parametric or non-parametric, etc.) and the purpose of the analysis. • There are no harmful effects.

	• There is evidence of a statistically significant positive impact ($p < .05$) on at least one EIF outcome. • The intervention's model clearly identifies and justifies its primary and secondary outcomes and there is a statistically significant main effect of improving at least one or more of these outcomes, depending on the number of outcomes measured. • There is consistency amongst the findings, resulting in few mixed results within the study. • Subgroup analysis is used to verify for whom the intervention is effective and the conditions under which the effectiveness is found. (Statistically significant findings within subgroups are not treated as a replacement for a main effect.) To achieve a **2+** rating: • The programme will have observed a significant positive child outcome in an evaluation meeting all of the criteria for a Level 2 evaluation, but also involving a treatment and comparison group. • There is baseline equivalence between the treatment and comparison-group participants on key demographic variables of interest to the study and baseline measures of outcomes (when feasible).
NL2	**No evidence at Level 2**. Programmes that do not yet have Level 2 evidence for a variety of methodological reasons. Programmes falling into this category are typically at earlier stages of their development, doing important foundational work. This work includes **confirmation** of the programme's core assumptions and logic model and **verification** of its primary child outcomes: • **Confirmation.** The programme is confirming key elements of its logic model and their grounding in scientific evidence. • **Verification.** Key elements of the logic model have been confirmed and their feasibility for improving child outcomes is being verified.
NE	A programme with evidence from at least one rigorously conducted RCT/QED that is also the most rigorous impact evaluation demonstrating no effect on child outcomes. The evidence must meet the following requirements: • The evaluation must meet the requirements for a Level 3. • However, the evaluation will fail to demonstrate any statistically significant positive benefits for parents or children. In these instances, a rating of 'no effect' (NE) is applied to suggest that a rigorously conducted evaluation has failed to confirm positive benefits for parents or children.

Annex 3

The EIF approach for assigning cost ratings to early intervention programmes

As a What Works Centre, the Early Intervention Foundation (EIF) assesses the evidence on the evidence of effectiveness of early intervention programmes, along with information about costs and scale of impact, in order to inform national and local commissioning decisions. This paper sets out in detail the approach used by EIF to assign a cost rating to the interventions it assesses, which complements the EIF's Strength of Evidence rating.

Importantly, the aim of this work is *not* to arrive at precise monetary estimates of the unit cost of each intervention (although such information is important and relevant where available). Such estimates are challenging and take a lot of time to quantify, and can even be unknown to the developer or commissioner of the intervention in question. Nor is the aim of this approach to present market prices that commissioners may face: this is commercially sensitive information that is not routinely available in comparable terms across interventions, and in practice will have to be negotiated between provider and commissioner.

Instead, EIF has developed a scale which allows programmes to be summarised in terms of how resource-intensive they are to deliver per child that is supported. This framework can be consistently applied to any programme that is sufficiently well specified in terms of inputs and delivery requirements, as it is these inputs and delivery requirements that the EIF cost rating summarises, as they are the crucial drivers of a programme's level of cost. This framework enables statements to be made about *relative* cost, allowing interventions to be compared to each other in terms how resource-intensive they are.

The data section discusses the information that has been collected for each intervention in the EIF Guidebook, and the way that it has been codified in to permit analysis. The methods section discusses the analytical and statistical approach which leads to the creation of a cost rating for programmes.

Data

As our approach is input-based, we have constructed a database which collects and codifies the inputs and delivery requirements for programmes to which a cost rating is to be assigned. These data include:

- Programme training fees (£)
- Training time for each practitioner (days)
- Whether booster training is required (Yes/No)
- Costs of programme materials (initial and ongoing) (£)
- Programme delivery hours for each practitioner involved
- Qualification level of each practitioner involved
- Whether internal and external supervision are required (Yes/No)

- Qualifications of internal and external supervisors (if applicable)
- Whether a license is required (Yes)
- Typical size of intervention group (Banded)

Much of this information was collected through a detailed online survey given to programme providers which contained a questionnaire about their programme's costs, inputs and delivery requirements. Table 1 shows how the resulting source information that was extracted from this questionnaire, and how it is structured and categorised.

TABLE 1: STRUCTION OF INFORMATION COLLATED FOR EACH PROGRAMME

Field	Values
License required	Yes/No
Number of practitioners involved	Numeric
Programme training fees	£
Costs of programme materials (initial and ongoing)	£
Training time for each practitioner	Number of days
Qualification level of each practitioner[376]	QCF level (2-8)
Typical treatment group size[377]	Number of participants
Total intervention duration[378]	Number of hours
Internal supervision required	Yes/No
Qualification level of internal supervisor	QCF level (2-8)
Training time for internal supervisor	Number of days
Second internal supervisor required	Yes/No
Qualification level of second internal supervisor	QCF level (2-8)
Training time for second internal supervisor	Number of days
External supervision required by host agency	Yes/No
Intensive external supervision by programme trainer/developer	Yes/No
Qualification level of external supervisor	QCF level (2-8)
Booster training required	Yes/No
Level of need	Low/Medium/High

[376] The recommended or typical QCF level was used here, or the level associated with the profession in question (e.g. teacher). Where no minimum qualification was specified, QCF Level 2 was used.

[377] Where this is given as a range of values (e.g. 4-12), we use the midpoint (e.g. 8). For programmes delivered at the school level, the typical size of a year group was used.

[378] Where this is given as a range of values (e.g. 10-30), we use the midpoint (e.g. 20).

While this information is comprehensive and provides a detailed picture of the resources required to deliver programmes, it is by no means an exhaustive set of the determinants of programme cost. That would be impossible to assemble as it would depend on local and commissioner-specific factors, as well as the idiosyncrasies of a programme which do not nest neatly within a categorical framework. Instead, this information is best thought of as the maximum set of important drivers of cost which can be collected across a large number of programmes in a consistent manner.

Methods

Basic approach

The information in Table 1 could, if combined in a certain way, be used to form a crude approximation of unit cost for a programme. Our methodology attempts to 'weight' and combine each input in the optimal manner to result in an index which is the best possible approximation to actual unit cost. This requires plugging in some additional parameters, such as the cost of a license and the hourly wage rates of each practitioner, which have to be assumed.

First, the information in Table 1 needs to be converted into numeric forms in order for analytical methods to be applied. All fields coded as "Yes/No" were converted to binary variables (1 = "Yes", 0 = "No"). For each qualification level in the data, a relative wage rate was created as a multiple of the national minimum wage. Wage rates by qualification were taken from the Office for National Statistics and 2011 US Census.[379] Multiplying this by the time input required for each practitioner (including training time) then offers an estimate of the main labour cost – or rather, an estimate of a quantity that should be highly correlated with a programme's actual labour cost.

For a small number of programmes, detailed information on unit costs in £/child was available as it had been published by the Social Research Unit at Dartington.[380] This data provided way of testing and refining our approach. Specifically, our approach combined the data in Table 1 into an optimal unit cost function – the measure of resource intensiveness – that fitted as closely as possible to actual published unit costs per child, for the programmes with known unit costs.[381] The same model then generates out-of-sample predictions for the remaining programmes which do not have known unit costs, and these predictions are turned into cost ratings.

Model to estimate optimal unit cost function

Our approach essentially creates the optimal line of best fit between known unit costs and some combination of the data in Table 1. To operationalise this, the following model was estimated via nonlinear least squares (NLS).[382] For the programmes with known unit costs from SRU, The model estimates a conditional expectation of this unit cost, C, with the following function:

$$\frac{\alpha(F + \sum_i T_i)(1 + B) + \alpha M_1 + (1 - \alpha)M_2 + \sum_j D_j + \varepsilon E_1(N(1 + \kappa E_2)) + \lambda L(N(1 + \kappa E_2)) + \eta \sum_k I_k\,(N(1 + \kappa E_2))}{G}$$

[379] See http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-227664. This only provides wage rates up to degree level (QCF Level 6). For higher qualifications, the wage relativity (as a multiple of the degree level wage) was taken from US Census data (http://www.census.gov/prod/2012pubs/acsbr11-04.pdf).

[380] See http://investinginchildren.eu/sites/default/files/Investing%20in%20Children%20-%20Technical%20Report%20(September%202013).pdf.

[381] See the Appendix for a list of these programmes.

[382] This was implemented in Stata using the "nl" command.

Where:

- F denotes a programme's training fees
- $\sum_i T_i$ is the estimated total salary cost of training practitioners and internal supervisors
- B is a dummy variable for whether booster training is required
- M_1 is the initial (first year) cost of programme materials
- M_2 is the ongoing cost of programme materials
- $\sum_j D_j$ is the estimated total salary cost of programme delivery for practitioners
- E_1 is a dummy variable for whether external supervision is required
- N is an ordered variable for the level of need
- E_2 is a dummy variable for whether intensive external supervision is required
- L is a dummy variable for whether a license is required
- $\sum_k I_k$ is the salary-weighted total number of internal supervisors

The parameters $\varepsilon, \lambda, \eta$ are all estimated through NLS, while α and κ are estimated using an iterated grid-search.[383] There is a two-stage algorithm whereby the NLS happens in the second stage, taking as given the chosen values of α and κ. The first stage loops over α = [0.01, 0.02, 0.03, …, 0.2] and κ = [1, 1.1, 1.2., …, 10], meaning that overall the algorithm involves 1,729 total iterations of the NLS model.

The final model estimates are then extracted by recovering the values of α and κ (and the associated values of $\varepsilon, \lambda, \eta$) that provide the optimal model fit. For each set of parameter values, the associated fitted values of the dependent variable, $\hat{C}$, are computed. The optimisation criterion is calculated as the sum of the Pearson product-moment correlation between C and $\hat{C}$, and the Spearman rank correlation between them:

$$\bar{\rho} = \rho_{C,\hat{C}} + \rho_{rC,r\hat{C}}$$[384]

The iterations are then ranked according to $\bar{\rho}$, and the 5% of iterations with the highest value of it are retained.[385] A new value of the two parameters, $\tilde{\alpha}$ and $\tilde{\kappa}$, is then calculated as the sample mean across these iterations. Finally, the NLS model is re-estimated after plugging in $\tilde{\alpha}$ and $\tilde{\kappa}$ in order to arrive at the final optimal specification.

[383] Only a small number of the parameters can within the NLS model, as there are only 27 data points to work with: estimate more parameters inside the model introduces numerical instability. Hence two of the parameters are pinned down outside the model through the grid-search.

[384] The sum of the correlation coefficients was used in order to avoid over-reliance on the Pearson product-moment correlation, which can be sensitive to underlying distribution properties. Further, the Spearman correlation is clearly relevant for this analysis as the ability to rank programmes accurately ensures that statements can be made about relative cost.

[385] This smoothes out differences and discontinuities in α and κ between iterations with very similar values of the optimisation criterion.

Estimation results

Table 2 presents the estimated parameters in the optimal model specification.

TABLE 2. PARAMETER ESTIMATES IN OPTIMAL MODEL SPECIFICATION

Model parameter	Value
$\tilde{\alpha}$	0.0155
$\tilde{\kappa}$	7.245
ε	25.924
	(63.807)
λ	185.886**
	(86.532)
η	3.080
	(4.878)

Goodness-of-fit parameter	Value
R^2	0.883
$\rho_{C,\hat{C}}$	0.932
$\rho_{rC,r\hat{C}}$	0.754
$\bar{\rho}$	1.686

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The bottom half of the table shows that the NLS model set out above is able to display an excellent goodness of fit, especially given the challenges of this analysis, the structure imposed and the relatively parsimonious nature of the source data. Among the programmes used in the estimation sample, there is a correlation of 0.932 between the actual unit cost published by SRU (C) and the unit cost values predicted by the model. Under the final model specification, we are able to explain 88% of the variation in actual unit cost ($\hat{C}$).

This establishes the generally accuracy and validity of the modelling approach, and in particular the predictions $\hat{C}$. These are then extended to other programmes not in the estimation sample by using the same model parameters in Table 2 to generate out-of-sample predictions. Hence $\hat{C}$ can be calculated for any programme for which the data in Table 1 is available.

Having established a robust way of modelling a reasonable approximation of an intervention's unit cost per child/family, the next step is to create the actual ratings used to by EIF. The ratings are created as a banded version of $\hat{C}$, as shown in Table 3 below. Note that the ratings are based on fixed thresholds (100; 500; 1,000; 2,000); other methods of imposing cut-points, such as clusters or quintiles, have been purposefully avoided. This means that the thresholds used are relatively independent of the set of programmes that was used to estimate the NLS model (see Table 4), and thus relatively independent of the set of programmes for which existing accurate unit cost information is available

TABLE 3: CREATION OF COST RATINGS

Predicted £/child ($\widehat{C}$)	Cost rating label
$\widehat{C} < 100$	Low
$100 \leq \widehat{C} < 500$	Medium/low
$500 \leq \widehat{C} < 1{,}000$	Medium
$1{,}000 \leq \widehat{C} < 2{,}000$	Medium/high
$\widehat{C} \geq 2{,}000$	High

TABLE 4. PROGRAMMES USED IN NLS MODEL ESTIMATION

1. Botvin LifeSkills Training
2. Good Behaviour Game (GBG)
3. Discussion Groups Triple P (Level 3)
4. Group Teen Triple P (Level 4)
5. Lifestyle Triple P (Level 5 - Group)
6. Pathways Triple P (level 5) GROUP
7. Pathways Triple P (level 5) INDIVIDUAL
8. Primary Care Triple P (Level 3)
9. Standard Teen Triple P (Level 4)
10. Stepping Stones Triple P (Group)
11. Stepping Stones Triple P (Primary Care)
12. Stepping Stones Triple P (Selected)
13. Stepping Stones Triple P (Standard)
14. Success for All
15. Families and Schools Together (FAST)
16. Level 4 Group Triple P
17. Incredible Years BASIC Preschool Programme
18. Incredible Years School Age Basic Programme
19. Incredible Years Toddler Basic Programme
20. Standard Triple P (level 4)
21. Functional Family Therapy (FFT) Complex Needs
22. Functional Family Therapy (FFT) Moderate Needs

23. Reading Recovery
24. Parents as First Teachers (Born to Learn)
25. Family Nurse Partnership (FNP)
26. Multidimensional Treatment Foster Care - Adolescent
27. Multisystemic Therapy (MST)