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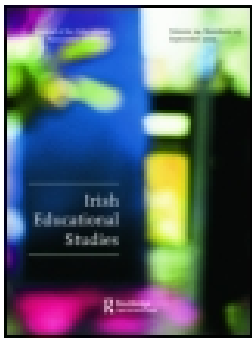
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An evaluation of lifestart, a universal home-based parenting programme in Ireland aimed at improving parent and child outcomes

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ABSTRACT

This five-year randomised controlled trial explored the impact of the Lifestart home visiting parenting programme, on parent and child development outcomes. The Lifestart Programme is a universal and structured child-centred programme of information and practical activity for parents of children aged from birth to five years of age. In total, 424 parents and children participated, and outcomes were measured at pre-test (child age < 12 months), mid-point (age 3) and post-test (age 5). Compared to the control group, parents who received the Lifestart programme reported reduced parenting related stress, increased knowledge of their child's development and improved confidence in their parenting role. There was no evidence of any change in child development outcomes (i.e. cognitive, behavioural, social or emotional development) and there was no clear evidence of any consistent differential programme effects in relation either to gender, first time motherhood, high pre-test anxiety or low maternal education. The results are commensurate with findings from other evaluations of similar programmes and are aligned to the hypothesised theory of change. The study contributes to the limited knowledge on solely home visiting, universal parenting programmes on parent and child outcomes.

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Randomised controlled trial;
Early child development;
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Introduction

Healthy child development relies on families being able to provide a safe and nurturing environment for their child, and home visiting parenting programmes provide an avenue through which parents can be supported and educated (Biglan et al. 2012). Research suggests that parents are increasingly aware of rapid early child development, and that family contexts are increasingly diverse (National Academies of Sciences, Engineering,

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and Medicine 2016). Navigating parenthood can be challenging, particularly against a backdrop of isolation or socio-economic difficulties (Hoff and Laursen 2019; Kane, Wood, and Barlow 2007). Parenting behaviour is also affected by how an individual was parented themselves, and adverse childhood experiences can have an intergenerational legacy (Lomanowska et al. 2017).

Parenting programmes are designed to equip parents with knowledge, skills and understanding which, when combined with peer support, provide parents with a greater sense of control and an enhanced ability to cope with stress (Vismara, Sechi, and Lucarelli 2020). Common to many parenting programmes is a focus on developmental relationships: reinforcing positive parent–child interactions and providing opportunities for parents to practice their newly learned skills with their children (Kaminski et al. 2008; Li and Julian 2012; Tully 2008). All of which can lead to reduced feelings of guilt and isolation as well as increased levels of understanding of their child’s behaviour and greater confidence in dealing with that behaviour (Kane, Wood, and Barlow 2007).

Several systematic reviews provide strong evidence that parenting programmes make an important difference to the quality of the home learning environment as well as parent and child outcomes, including: health care use, birth outcomes, health behaviours, improved parent behaviours, attachment and child wellbeing and development (Council on Community Pediatrics 2009; Filene et al. 2013; Kendrick et al. 2000; Paulsell, Del Grosso, and Supplee 2014; Peacock et al. 2013; Ryan, O’Farrelly, and Ramchandani 2017; Sweet and Appelbaum 2004). The Home Visiting Evidence of Effectiveness (HomVEE) review (Avellar et al. 2014) concluded that most of the effective programmes in their review had multiple favourable effects. Many of these effects were maintained for over a year and were not limited to certain subgroups (i.e. most samples were racially, ethnically and socioeconomically diverse). Few adverse effects were reported.

As a result of this combined evidence, supporting parents has been highlighted as a priority in scientific, educational and policy research. Supporting parents within the family is now embedded in the UN Convention on the Rights of the Child (UNCRC), which states that while the family is responsible for guaranteeing a child’s rights, families must be supported in this role by the State (Article 18.2) (McClenaghan 2012). Taking a longer term view: parenting support is seen as having the potential to improve educational outcomes and reduce the risk of criminal behaviour, and improved parenting skills are seen as contributing to the reduction of poverty and social exclusion (European Commission 2013).

Models of home visiting

There are two dominant models of effective home visiting: targeted and universal delivery. Targeted programmes are aimed specifically at populations at risk of poor outcomes, whilst universal programmes (such as Lifestart) are available for all parents, regardless of circumstances or family characteristics (Barnett, Brown, and Shore 2004; Ulfsdotter, Enebrink, and Lindberg 2014).

Evaluations of targeted parenting programmes provide evidence of improved parenting skills, knowledge and self-efficacy, along with a reduction in child behaviour

problems (Dretzke et al. 2009; Furlong et al. 2012). In their meta-analysis, Kaminski et al. (2008) note that targeted programmes were more effective in improving parenting knowledge, attitudes and self-efficacy compared to parenting behaviours and skills, or indeed child outcomes. Similarly, evaluations of other targeted programmes highlight a primary effect on parenting, followed by a positive change in child behavioural outcomes during follow up visits (DeGarmo, Patterson, and Forgatch 2004). It is therefore suggested that targeted programmes improve parenting behaviours in the first instance, but *can* lead to (albeit smaller) changes in child outcomes, depending on the context and identified needs (DeGarmo, Patterson, and Forgatch 2004).

Evaluations of universal parenting programmes have also found positive outcomes on parenting competence (Morawska et al. 2011; Reedtz, Handegard, and Mørch 2011), self-efficacy (Morawska et al. 2011; Ulfsdotter, Enebrink, and Lindberg 2014), and strategies and attitudes (Hiscock et al. 2008; Zubrick et al. 2005). This parental change subsequently improves child outcomes, with improved child behaviour becoming evident over time (Altafim, McCoy, and Linhares 2021; Hahlweg et al. 2010; Morawska et al. 2011; Reedtz, Handegard, and Mørch 2011; Sherr et al. 2014; Zubrick et al. 2005). The findings from the above studies suggest that universal programmes are an important approach to improving family outcomes. However, positive parental outcomes are not consistently observed when evaluating programmes offered at a universal level (Eisner et al. 2012; Simkiss et al. 2013).

Whilst both approaches have been shown to be effective, targeted provisions are viewed as advantageous over universal programmes due to their lower cost. Only families identified as most at risk of poor outcomes receive the programme, and programme effectiveness may be enhanced as resources are not diluted (Barnett, Brown, and Shore 2004). Universal programmes however are often viewed favourably because more parents enrol from all cross-sections of the community, thereby reducing the potential stigma of participation and helping to improve the integration of those from different ethnic and socio-economic backgrounds (Spoth, Kavanagh, and Dishon 2002). Thus, universal provision *can* be effective at reaching those in need and, despite higher costs, has the potential to produce significantly larger long-term benefits as everyone in a specific geographical location can participate in the programme (Barnett, Brown, and Shore 2004).

The programmes discussed above are typically group based with some home visiting also involved. The evidence is less certain around the effectiveness of universal programmes that, similar to Lifestart, are *only* home visiting and are aimed specifically at improving child developmental outcomes for pre-school children. In their systematic review Miller, Maguire, and Macdonald (2011) found few high-quality, relevant evaluations conducted over 20 years. Of the small number of studies that were included in the review, there was insufficient evidence to conclude that such developmentally focused programmes improve developmental outcomes. The current study will contribute to the limited knowledge on child development focussed home visiting, universal parenting programmes, to examine the effectiveness of Lifestart on parent and child outcomes (described in more detail below). It is relevant to an Irish and UK policy environment where more emphasis is being placed on prevention and early intervention (Irish Government 2014; UK Government 2021).

Intervention – the lifestart programme

The Lifestart Programme (Lifestart), established and delivered by the Lifestart Foundation (www.lifestartfoundation.org), is underpinned by the concept of ‘progressive universalism’ which aims to support families regardless of need in the first instance, and then provide tailored support, or signposting, depending on identified or emerging need (Peckover 2013). It is a universal, structured child-centred programme of information and practical activity, operating (at the time of the study) across Ireland, for parents of children aged from birth to five years of age. Lifestart aims to support positive nurturing and provide parents with the tools to enhance their children’s learning environment. It is delivered to parents in their own homes by trained, paid Family Visitors and it is offered to parents regardless of social, economic or other circumstances. Family Visitors come from a range of backgrounds with many having experience of childcare, teaching or social care. They are employed by the Lifestart Foundation.

Every parent who joins the Lifestart programme receives a monthly issue based on the Growing Child curriculum (2017), which consists of a parent-directed, child-centred structured curriculum of information, knowledge and practical learning activity that covers all aspects of child development and learning: physical, emotional, intellectual, creative and social. In total, parents receive sixty issues over the five year engagement period. In addition, parents receive a 30–60 min home visit from a Lifestart Family Visitor, once a month for five years. Together, the issues of the Growing Child and the visit provide age-specific information on strategies and approaches parents can adopt with their child and what developmentally appropriate materials they might use in activities with their child. The programme empowers parents with knowledge, and encourages strong attachment through engaging activities. The home visit also offers parents the opportunity to discuss progress during the last month and focus attention on those areas highlighted by parents. The Lifestart programme is based on a logic model, which depicts how the programme is thought to work (Figure 1). The initial impact of the Lifestart programme is on parenting outcomes, which in turn impact positively on child development outcomes (Figure 2).

Outcomes for parents include increased knowledge, confidence and reduced parenting-related stress. Lifestart’s anecdotal experience suggests that parents who have taken part in the Lifestart programme are more confident about child-rearing, less stressed in their own parenting, more sensitive and responsive to their child’s individual needs and have better and more stable relationships with their children. Furthermore, Lifestart would propose that these changes in parental outcomes generate better child outcomes in terms of physical health and the acquisition of cognitive and non-cognitive skills; outcomes which have positive implications for future learning potential and life chances. Aligned with Vygotskian theory this process encourages scaffolding and extends the zone of proximal development (Vygotsky 1987) such that a child’s potential and as yet incomplete cognitive (or other) skills develop into improved and more assured skills and competencies. This underlines the role of the parent in extending what a child can do without assistance, and to what they can achieve with collaboration and support (Smith, Dockrell, and Tomlinson 1997, 47).

Parent and child outcomes are reinforced through the promotion of a social environment conducive to childhood learning and growth. Typically, Family Visitors encourage

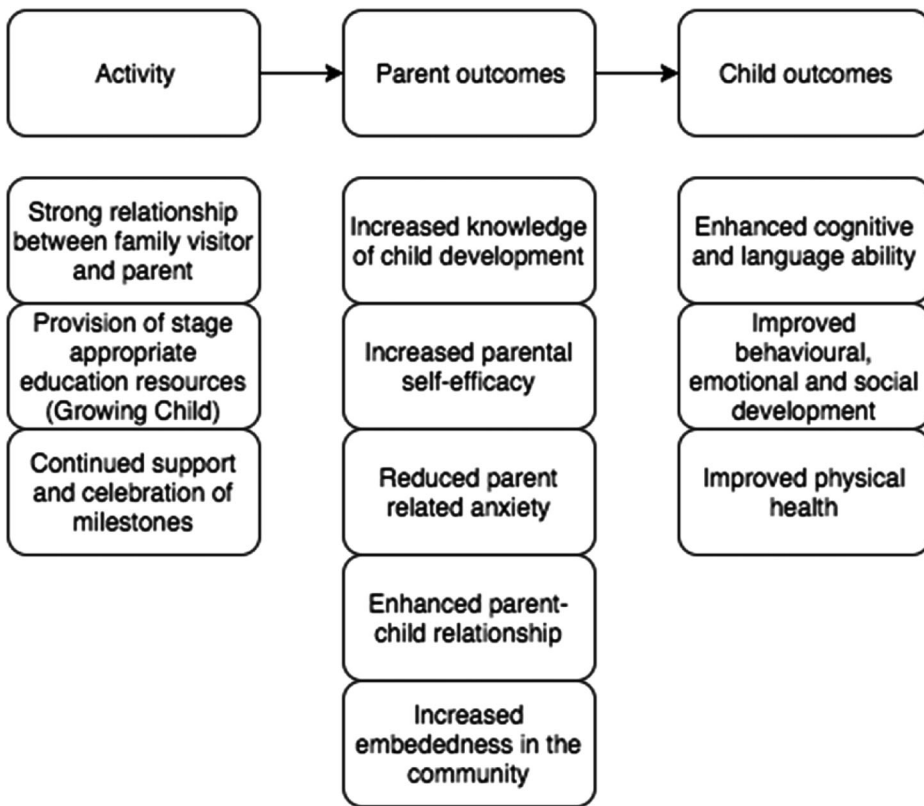


Figure 1. The Lifestart Logic Model.

parents to actively engage in the intervention through a process of modelling and coaching, and better engagement in this process is associated with better outcomes (Butler et al. 2020; Peterson et al. 2007).

In accordance with parental self-efficacy theory (Cutrona and Troutman 1986), the Lifestart programme aims to work in partnership with parents to equip them with

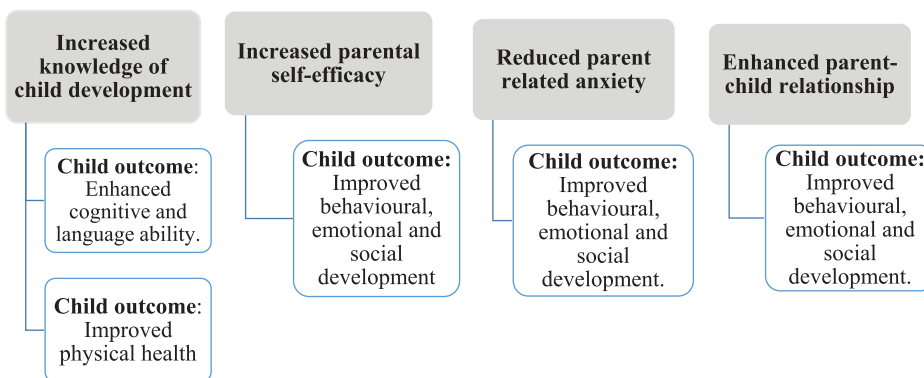


Figure 2. Relationship between parent and child outcomes through the Lifestart program.

appropriate developmental knowledge alongside enhancing their belief that they can be a competent, effective parent (Miller and Harrison 2015) and positively influence the development of their child (Coleman and Karraker 1998). This positive change in beliefs is important since parental self-efficacy has been shown to have both direct and indirect effects on child outcomes through changes in parental behaviour (e.g. Bohlin and Hagekull 2009). Furthermore, maternal self-efficacy has been shown to directly mitigate the impact of other known determinants of parenting quality including deprivation, infant temperament, social support and maternal depression (Teti and Gelfand 1991). Consequently, parents are supported in enabling mediated learning whereby the child – under their parents’ guidance – develops problem solving skills, and applies them to a range of novel contexts.

Materials and method

Design

A simple randomised controlled trial was undertaken to explore the impact of the Life-start programme on parent and child outcomes, and answer the question: does the Life-start programme improve outcomes for parents (knowledge, confidence, anxiety) and children (cognitive, behavioural and social emotional development) who take part over five years?

Recruitment

Participants were recruited via a coordinated and multi-stranded recruitment campaign in Lifestart project areas across Ireland. Study recruitment took place between May 2008 and December 2009. The strategy involved: leaflet advertising, media advertising and ‘on the ground’ awareness of the study. To take part in the study, parents were required to make the initial approach to express an interest in participating. Those interested called a Freephone number to speak to a member of the research team directly. At this point, a researcher explained what participation would involve in terms of being randomised to either the treatment or control arm, and also data collection. This first contact also gave the parent an opportunity to ask any questions they might have about the study. Parents were assured that they would be free to withdraw their participation from the research at any point during the duration of the study. If interest remained at this stage, the parent was sent further written information. This was followed by a telephone call and, if the parent verbally consented to take part, a suitable time was arranged for a home visit for written consent to be obtained and the baseline (pre-test) data collection to be undertaken.

Allocation

Individual families were the unit of randomisation and analysis. In total, 435 parents and children were randomly allocated by an independent researcher to either the intervention or control group (using the random number function in SPSS). Simple randomisation with no restrictions was used and took place on a case by case basis once the pre-test

data were collected. Each participant had a 50% chance of being allocated to the intervention group. A researcher who was not responsible for collecting data informed parents of their allocation. Outcome assessors from the research team did not have access to any family's allocation and as far as possible this blinding was maintained throughout the data collection period and at each time point.

Participants

Parents were eligible to take part in the study if they had a child younger than 12 months old, lived in the catchment area of a Lifestart project and had not received the Lifestart programme before. Post allocation, 11 families withdrew their consent and so 424 parents and children took part in the Lifestart evaluation: 216 were randomly allocated to the intervention group and 208 to the control group. Figure 3 shows the selection and allocation of participants in more detail.

The mean age of children was 7.1 months (SD = 3.3 months) at the pre-test visit and 5 years 4 months (SD = 3.5 months) at post-test. Over 95% of children were described by their parent as being of anglo/celtic ethnic origin and 217 (51%) children in the study

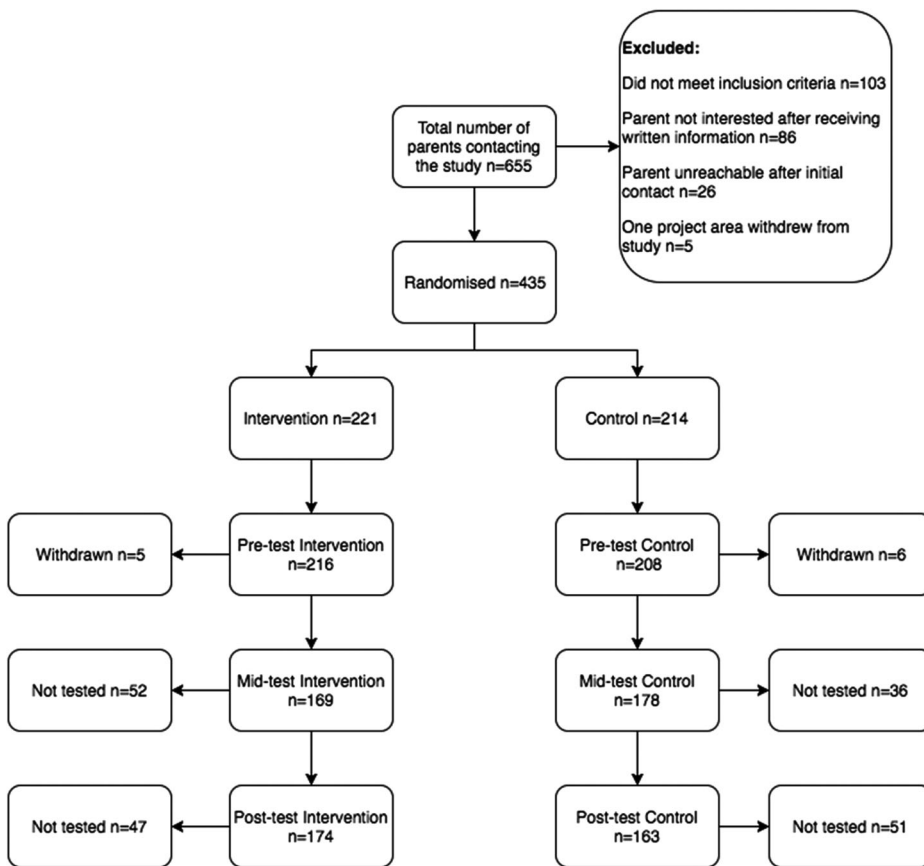


Figure 3. Flow diagram of the selection and allocation of participants. This figure illustrates how many participants were recruited, retained and withdrawn throughout the period of the study.

Table 1. Gender of participating children by group allocation.

Gender	Intervention	Control	Total
Girl	96 (44.4%)	101 (48.6%)	197 (46.5%)
Boy	120 (55.6%)	107 (51.4%)	227 (53.5%)
Total	216 (100%)	208 (100%)	424 (100%)

were a first child. The sample consisted of 46.5% girls and 53.5% boys and the breakdown of gender by group allocation is reported in Table 1.

Mothers were on average 32.9 years old (SD = 5.1 years, ranging from 16 to 45) and fathers were on average 34.8 years old (SD = 6.0 years, ranging from 17 to 53). Over 93% of mothers and fathers were of anglo/celtic ethnic origin and the majority of participants (74.8%) were married. A high proportion of mothers (64.6%), and to a lesser extent fathers (45.3%), had at least a university level education. Similarly, a high proportion of mothers (84.4%) and fathers (93.6%) were also in paid employment prior to the birth of the baby. Table 2 reports the breakdown of these demographic characteristics by group allocation.

Mothers returning to work: At pre-test, when children were on average 7 months old, only 29% of mothers in the sample had returned to work. By the time children were 3

Table 2 . Parental demographic characteristics by group allocation.

	Intervention	Control	Overall Sample
Age			
Mean maternal age	32.9 (SD = 5.3)	33.0 (SD = 4.9)	32.9 (SD = 5.1)
Mean paternal age	34.9 (SD = 6.5)	34.7 (SD = 5.5)	34.8 (SD = 6.0)
Marital status			
Single	19 (8.8%)	10 (4.8%)	29 (6.8%)
Married	154 (71.3%)	163 (78.4%)	317 (74.8%)
Living with partner	40 (18.5%)	34 (16.4%)	74 (17.5%)
Divorced	1 (0.5%)	0 (0%)	1 (0.2%)
Other	2 (0.7%)	1 (0.5%)	3 (0.7%)
Total	216 (100%)	208 (100%)	424 (100%)
Maternal education			
Degree level or higher	142 (65.7%)	132 (63.5%)	274 (64.6%)
Less than degree level	73 (33.8%)	74 (35.6%)	147 (34.7%)
Missing	1 (0.5%)	2 (1.0%)	3 (0.7%)
Total	216 (100%)	208 (100%)	424 (100%)
Paternal education			
Degree level or higher	97 (44.9%)	95 (45.7%)	192 (45.3%)
Less than degree level	118 (54.6%)	111 (53.4%)	229 (54.0%)
Missing	1 (0.5%)	2 (1.0%)	3 (0.7%)
Total	216 (100%)	208 (100%)	424 (100%)
Maternal employment status			
Working for payment or profit	186 (86.1%)	172 (82.7%)	358 (84.4%)
Looking after home	18 (8.3%)	17 (8.2%)	35 (8.3%)
Student	5 (2.3%)	9 (4.3%)	14 (3.3%)
Other ^a	6 (2.8%)	8 (3.8%)	14 (3.3%)
Missing	1 (0.5%)	2 (1%)	3 (0.7%)
Total	216 (100%)	208 (100%)	424 (100%)
Paternal employment status			
Working for payment or profit	203 (94.0%)	194 (93.3%)	397 (93.6%)
Looking after home	1 (0.5%)	1 (0.5%)	2 (0.2%)
Student	1 (0.5%)	2 (1.0%)	3 (0.7%)
Other ^a	10 (4.5%)	11 (5.3%)	21 (5.0)
Missing	1 (0.5%)	0 (0%)	1 (0.5%)
Total	216 (100%)	208 (100%)	424 (100%)

^a'Other' category includes: looking for first regular job, unemployed and unable to work.

years old the proportion of working mothers had increased to 73% and at the final point of data collection, when children were five years old, 86% of mothers reported that they had returned to work.

Attrition: In total 87 (20.5%) participants did not complete the study: 42 (19.4%) in the intervention group and 45 (21.6%) in the control group. There was no evidence of differential attrition between the intervention and control groups. The demographic characteristics of those who dropped out (either after pre-test or mid-point) were examined and it was found that mothers who dropped out were less likely to have a university degree (54.4%) than those mothers who did not drop out (67.5%) ($\chi^2 = 04.86$, $df = 1$, $p = 0.03$).

Sample size

Sample size calculations indicated that a sample of $n = 500$ parents and children would have over 80% power to detect an effect size of 0.2 (Hedges g) at the 0.05 level of significance and would allow for some attrition. It transpired that it was simply not possible to recruit this number of participants and so 435 participants entered the trial. This reduced sample size did not have an overly detrimental impact on the power of the study, which was an acceptable 84% (Jones, Carley, and Harrison 2003).

Control group

Families allocated to the control group did not receive the programme but instead continued to parent as normal without the family visitor home visit, information or Growing Child issues. It may be the case that parents' motivation to be part of the study reflects an intrinsic motivation to be engaged in other parenting initiatives and as such the sample might be a more highly engaged cohort of parents than would ordinarily receive the Lifestart programme. Furthermore, it could mean that while parents in the control group were not receiving the Lifestart programme they, and parents in the intervention group, may have sought out other parenting initiatives that might impact on parent and child outcomes.

Participation in other parenting programmes

All parents were asked what other parenting programmes they attended since the birth of their child. At pre-test 29% of control mothers and 32% of intervention mothers reported attending at least one other parenting related programme. However 90% of these programmes were based in the community and could be classified as short-term: 14% were breast-feeding groups; 25% were baby massage/yoga; 28% were mother and toddler groups, and; 34% included a wide range of 'other' programmes including, for example, swimming, post-natal groups, and music classes.

At Time 2, when children were 3 years old, only 18% of parents reported attending any parenting programmes and at Time 3 (post-test), 26% of parents reported attending other parenting programmes since the birth of their child. This inconsistency of recall across time points suggests that at Times 2 and 3 parents are perhaps not accurately recalling what programmes they attended when their child was a baby (Time 1). It points to the potentially short-term nature of the programmes that they *did* attend and indicates

that mothers were most likely to attend a parenting programme when their child was very young and when they were least likely to be working.

Outcomes and measures

The outcomes were selected on the basis of the logic model described in [Figure 1](#). It was hypothesised that the Lifestart programme would – through the monthly provision of stage appropriate information and tailored support from a family visitor – improve parents' knowledge of child development, increase confidence in the parenting role, reduce parent related anxiety, enhance the parent–child relationship and increase parents' participation in the local community. As a consequence of these parent-related changes it was further hypothesised that children's cognitive and language skills would be enhanced alongside improved behavioural, emotional and social development as well as better physical health. The tests used to measure both parent and child outcomes are described in [Table 3](#).

Data collection

Data were collected by the research team between 2009 and 2014. Using a computer assisted interview technique, parent measures were administered during a home visit which lasted approximately 90 min. Child outcome data were collected via a developmental assessment using the Bayley Scales of Infant Development during the same home visit. All participants were tested at three time points: when the child entered the evaluation (aged less than one year); when the child was three years old (before pre-school or formal education), and; when the child was five years old (post completion of the intervention). The measures were scored and prepared for analysis by the research team.

Statistical analysis

Main analysis

Data were analysed in Stata version 13.1. For each of the outcome measures, a linear model (using robust standard errors) was estimated using the relevant post-test score as the dependent variable and a dummy variable representing parents' allocation to the intervention or control group was included as an independent variable. Other covariates were also included in the model i.e. the associated pre-test score for the outcome variable of interest, gender, maternal education and the pre-test scores for the remaining outcomes. Effect sizes were calculated using the formula for Hedges g using the estimated post-test mean scores for the control and intervention groups from the statistical models, the standard deviations for both groups at pre-test and their respective sample sizes. All variables were standardised prior to analysis.

Exploratory analysis

It was hypothesised that the programme would have a differential impact for boys compared to girls; mothers who were first-time mothers; mothers with a lower level of educational attainment, and for those mothers who were particularly anxious from the

Table 3. Parent and child outcomes and measures.

Outcome	Measure	Cronbach's Alpha ^a
Parent outcomes		
Knowledge of child development	Knowledge of Infant Development Index (KIDI) (MacPhee 1981). Three summary scores are calculated from the raw data (attempted items, accuracy and total correct) and four subscales (norms and milestones; principles; parenting and health and safety) can be further used if necessary.	0.57–0.68
Parental self efficacy	Tool to Measure Parental Self Efficacy (TOPSE) (Kendall and Bloomfield 2005). TOPSE has eight domains: emotion and affection; play and enjoyment; empathy and understanding; control; discipline and setting boundaries; pressures; self-acceptance and learning and knowledge.	0.90–0.93
Parent related anxiety and parent–child relationship	Parenting Stress Index (PSI, long form) (Abidin 1997). The PSI has three subscales: parental distress, parent-child dysfunctional interaction and difficult child, which yields a 'Total Stress' score. There are also child and parent subscales. The child subscales include: adaptability; acceptability; distractibility/hyperactivity; demandingness; mood; reinforces parent. The parent subscales include: competence; social isolation; attachment; parent health; role restriction; depression; relationship with spouse.	0.89–0.93
Community participation	18 item neighbourhood questionnaire designed by the research team to capture social cohesion, satisfaction with the area, perceived influence in community decisions and participation in community events.	0.64–0.70.
Child outcomes		
Cognitive ability and language skills	Bayley Scale of Infant and Toddler Development (III) (Bayley 2006) – Time 1. Subscales include cognitive development; language development (receptive and expressive); motor development (fine and gross). British Ability Scales (II) (Elliot, Smith, and McCulloch 1997) was used to measure cognitive development, fine motor, communication and language skills: the Early Years scale (used at Time 2) and the School Age scale (used at Time 3). Speech and language referrals were used as a measure of language difficulty at Time 3.	0.86–0.93
Behavioural, emotional and social development	Times 1 and 2 were measured using the social-emotional development and adaptive behaviour development subscales of the Bayley Scale of Infant and Toddler Development (III). At Time 3 the Strengths and Difficulties Questionnaire (SDQ) (Goodman 2001) was used to measure socio-emotional development, including: emotional symptoms; conduct problems; hyperactivity/inattention; peer relationship problems and prosocial behaviour.	0.82
Physical health	Parental report rated on a scale of one to ten how healthy parents perceived their child to be.	

^aAs measured within the current study.

outset. The appropriate interaction terms were created and included in the main models. Evidence of differential effectiveness of the programme was indicated by the statistical significance of the interaction term(s).

Results

Group differences at pre-test

To explore equivalence between the intervention and control groups at baseline, pre-test differences in outcomes were examined and are reported in Table 4.

Table 4. Differences in outcomes at pre-test between the intervention and control groups.

	Intervention	Control	Min, max
	Unstandardized Mean (SD)	Unstandardized Mean (SD)	
Parent outcomes	(n = 216)	(n = 208)	
Knowledge of infant development	43.30 (7.64)	43.57 (7.66)	16, 63
Parental efficacy	7.11 (0.81)	7.16 (0.80)	4, 9
Parenting stress	1.96 (0.28)	1.96 (0.27)	1, 3
Community participation	12.18 (1.64)	12.13 (1.74)	7, 14
Child outcomes			
Cognitive development	11.98 (2.61)	12.09 (2.57)	1, 19
Language development	22.11 (3.88)	21.86 (4.04)	10, 34
Motor development	20.74 (4.26)	20.97 (4.59)	3, 34
Socio-emotional development	10.04 (2.92)	9.91 (3.01)	1, 19
Child health	8.83 (1.64)	8.86 (1.57)	0, 10

Effects of programme at mid-point

Data were collected on all outcomes at the mid-point (Time 2) of the intervention, when participating children were on average 3 years old. When controlling for differences at pre-test between the control and intervention groups, differences in parent and child outcomes at the mid-point are inconsistent in terms of direction, and uncertain in terms of magnitude (reflected by the wide confidence intervals, all of which include zero). See Table 5.

Effects of programme at post-Test

Table 6 reports differences in parent and child outcomes between the control and intervention groups at post-test (when children are aged 5 years), whilst controlling for any differences across all outcomes, at pre-test. The beta coefficient (and robust standard error) associated with the dummy variable representing parents' allocation to the intervention or control group are reported first, followed by the mean post-test score for each group, adjusted for pre-test differences. Finally, the effect size (Hedges' g), 95% confidence intervals and p value associated with the beta coefficient are presented.

Table 5. Differences in outcomes at mid-test between the intervention and control groups.

Outcome	Adjusted post-test mean (SD)		Effect size (Hedges g) [95% CI]	P value
	Control group	Intervention group		
Parent outcomes	n = 178	n = 169		
Community participation	.045 (1.031)	.079 (.972)	.034 [-.166, .234]	.737
Parenting stress	.080 (1.024)	.026 (.979)	-.054 [-.249, .141]	.587
Knowledge of child development	-.093 (1.002)	.068 (1.000)	.161 [-.027, .349]	.094
Parenting efficacy	.017 (.976)	-.022 (1.025)	-.038 [-.263, .187]	.739
Child outcomes				
Cognitive development	.018 (.994)	-.046 (1.007)	-.634 [-.277, .149]	.557
Socio-emotional development	-.108 (1.016)	.087 (.987)	.195 [-.046, .437]	.114
Child health	.043 (.979)	-.089 (1.022)	-.131 [-.317, .054]	.165

Table 6. Summary of main effects for parent and child outcomes at post-test.

	Beta	Robust SE	Adjusted post-test mean (SD)		Effect size (Hedges g) [95% CI]	P value
			Control n = 163	Intervention n = 174		
Parent outcomes						
Knowledge of child dev't	.277	.114	-.148 (1.002)	.129 (1.000)	.277 [.053, .500]	.016
Parenting efficacy	.213	.107	-.125 (.976)	.089 (1.025)	.213 [.003, .423]	.047
Parenting stress	-.220	.109	.142 (1.024)	-.078 (.979)	-.220 [-.434, -.006]	.045
Community participation	-.020	.109	.011 (1.031)	-.009 (.972)	-.020 [-.234, .193]	.854
Child outcomes						
Cognitive development	.065	.108	-.069 (.994)	-.004 (1.007)	.065 [-.148, .277]	.551
Prosocial behaviour	.084	.117	-.056 (1.016)	.028 (.987)	.084 [-.145, .312]	.473
Total difficulties	-.066	.112	.061 (1.016)	-.005 (.987)	-.066 [-.285, .154]	.557
Child health	-.092	.099	.008 (.979)	-.084 (1.022)	-.092 [-.285, .102]	.354
Speech and language referrals	.752	.225	n = 34 (21.1%)	n = 28 (16.5%)	OR .752 [.419, 1.350]	.339

At this point in the evaluation, parents in the intervention group are reporting greater knowledge of child development ($ES = .277$; $p = .016$), higher levels of parenting confidence (efficacy) ($ES = .213$; $p = .047$) and lower levels of parenting stress ($ES = -.220$; $p = .045$) indicating that the Lifestart programme is effective in improving these parent outcomes. There is no difference between the control and intervention groups in community participation (social capital). There are small changes in four of the five child outcomes: better cognitive development, increased prosocial behaviour, decreased difficult behaviour and fewer referrals to speech and language therapy. Effect sizes range from .07 to .17 but are not statistically significant.

Exploratory analysis

There was no clear or discernible evidence of any consistent differential effects in relation either to gender, first time motherhood, high pre-test anxiety or low maternal education. It should be noted that some of the subgroups explored within these interaction models were small, thus limiting the reliable detection of group differences at this level.

Discussion

The pattern of estimates reported here provides strong evidence of measurable, positive changes in parent knowledge and attitudes, specifically: knowledge of child development, parental efficacy and parenting stress (Table 6). The changes in child outcomes (cognitive development, social and emotional development and speech and language referrals), whilst not statistically significant, do show a more consistent, positive pattern at post-test compared to the mid-point. Although speculative, this trajectory may continue as the cumulative effect of improved parenting builds up over time. It should be remembered that the sample of children in this study were not deemed to be vulnerable, or at risk and so additional gains in developmental outcomes are perhaps less likely to be achieved. There are few studies that have followed up the long-term effects of interventions similar to Lifestart, but of those that exist, findings suggest there may be benefits to

child outcomes as they get older and progress through school (Repetti, Taylor, and Seeman 2002; Hale, Fitzgerald-Yau, and Viner 2014).

The results of this study align with the hypothesised theory of change indicating that the Lifestart Parenting Programme is working as intended, with an initial impact on parenting outcomes which has, in turn, the potential to impact positively on child development outcomes.

The current findings in context

The statistically significant effect sizes observed in this trial ranged between .21 and .28 and it is not unusual to see Cohen's classification of effect sizes used to describe effects as large ($d > .8$), medium ($d > .5$) or small ($d > .2$). Cohen himself admitted that '*this is an operation fraught with many dangers*' (Cohen 1977) and so, using such arbitrary cut-offs means that we risk conflating 'magnitude of effect' with 'importance'. With this in mind it is useful to look to the wider research where we can see that the results of the Lifestart evaluation are consistent with the findings from similar, robust evaluations of comparable programmes.

The results of the current evaluation add to the weight of evidence demonstrating that home visiting programmes are an effective means of improving parent, and potentially child outcomes. This also aligns well with Vygotsky's theory, particularly around scaffolding behaviour and the zone of proximal development (ZPD), whereby parents can extend their child's learning to achieve their full potential (Smith, Dockrell, and Tomlinson 1997; Vygotsky 1987). The effect sizes from a number of meta-analyses are commensurate with those reported in the current study. Sweet and Appelbaum's (2004) meta-analysis of sixty U.S. home visiting programmes reported effect sizes that varied between $-.043$ and $.318$ across ten parent and child outcomes, more specifically: cognitive development (standardised mean difference (SMD) = $.184$), socioemotional development (SMD = $.096$), prevention of potential child abuse (SMD = $.239$), parenting behaviour (SMD = $.139$), parenting attitudes (SMD = $.110$) and maternal education (SMD = $.134$). A meta-analysis of US based home visiting programmes (Filene et al. 2013) included 51 studies and showed similar results with effect sizes (SMD) ranging from $.06$ to $.25$. Specifically, home visiting programmes in this analysis were effective in improving child cognitive outcomes (SMD = $.25$), parent behaviour and skills (SMD = $.23$) and maternal life course outcomes (SMD = $.20$). These effect sizes align with those reported in the current evaluation, providing clear supporting evidence that home visiting programmes such as Lifestart can make an important and positive impact, particularly for parent outcomes. Although effects on child outcomes were not statistically significant in the current evaluation, the meta-analysis conducted by Sweet and Appelbaum (2004) highlights the positive effect home visiting programmes can have on child outcomes including cognitive,

socioemotional, and prevention of child abuse. Considering past research on programmes of similar structure, concluding that Lifestart is ineffective in improving child outcomes would be ill advised without further research.

Implications for the theory of change

A meta-analytic review by Kaminski et al. (2008) focussed on parent training programmes targeted at preventing early childhood behaviour problems. They specifically

assessed which programme components were associated with more successful outcomes. The role of parents within such programmes is to act as an ‘agent of change’ for their child and as such, child outcomes are mediated by changes in parental behaviour. The authors hypothesised that because of this, they would observe larger effect sizes in parent outcomes compared to child outcomes. Their meta-analysis showed that the mean effect sizes were larger for parent outcomes than child outcomes. In particular, there were large effect sizes for parenting knowledge (SMD = .88), attitudes (SMD = .47) and self-efficacy (SMD = .49). Smaller effects were observed for parenting behaviours/skills (SMD = .39) and, in terms of child outcomes, there were greater effects for internalising behaviours (SMD = .40) than externalising behaviours (SMD = .25). Programmes had greater effects on a child’s social skills/prosocial behaviour (SMD = .26) than on cognitive and education skills (SMD = .13). The results of this review and meta-analysis are consistent with the findings from the current trial, and whilst this broad pattern of effects was observed within the current data, the changes in child outcomes were not statistically significant and so we cannot be certain that these were caused directly by the Lifestart programme. The results suggest that while parental self-efficacy theory can explain improvements in parenting outcomes, this improvement is not as easily translated into measurable changes in child development outcomes. This is not to say that parents are unable to extend or mediate their child’s development and learning, it may instead be related to whether (and how) parents implemented the programme between home visits. Unfortunately, the extent to which parents exercised their new knowledge and skills with their child within the current study is not known. Were parents to more intensively implement the required modelling behaviours directly with their child, this may well have resulted in detectable changes in child outcomes. Equally, this was a home visiting only programme and it might be the case that were a group element be introduced then this interaction with – and support from – other parents might facilitate a more active or consistent implementation of the programme between home visits.

It is important to note that there was no change in parents’ participation in the community. The inclusion of this outcome within the logic model was largely an artefact of the previous outworking of Lifestart, which actively encouraged parents to get involved in their community. As such this outcome remained within the logic model even though the programme element to which it related was no longer implemented. For this reason, it would be advisable to modify the logic model to exclude community participation and to ensure that the included outcomes are sufficiently closely linked to the programme content.

Limitations

A limitation worth noting is the external validity of the trial and the generalisability of the results to the wider population. It is not unusual for studies of this nature to attract participants who are self-selecting and motivated, and in this sample, 65% of mothers had a university level education. However, no interaction effects were detected to suggest that Lifestart might work better for some groups of parents (e.g. mothers with low levels of education, first time mothers or anxious mothers) compared to others. It may be the case that motivation to be part of the study reflects an intrinsic desire to be engaged

in other parenting initiatives and as such the sample might be a more highly motivated and engaged cohort of parents than would ordinarily receive the Lifestart programme.

This study was not designed to detect effect sizes smaller than .2 and it is possible that a larger sample might allow the reliable detection of smaller group differences. Furthermore, whilst this study was unable to provide evidence of statistically significant improvement in child outcomes at immediate post-test, this does not preclude the possibility of future improvement in child outcomes.

Future research

There are few studies that have followed up the long-term effects of this type of intervention, but of those that do exist, findings suggest that there may well be benefits for the child as they get older and progress through school. This would provide support for the mediating role parenting plays in the development of longer term child outcomes including: improved mental health, lower substance misuse, fewer externalising problems and better academic success (Barlow and Coren 2018; Hale, Fitzgerald-Yau, and Viner 2014; Repetti, Taylor, and Seeman 2002). For this reason, it would be important to design future projects that could track the longer term impacts of parenting programmes such as Lifestart on child outcomes. In addition, further tests of the programme should endeavour to explore the extent to which the programme is implemented by parents between home visits and to unpack the 'black box' of exactly how the programme works and whether the programme, as it is currently delivered (i.e. monthly and home visiting only) can be effective in improving child outcomes. These aspects could be best addressed using qualitative methods such as interviews with parents and family visitors.

Summary and conclusions

Lifestart has been shown to be effective in improving parental efficacy, reducing parent related anxiety and improving knowledge of child development. This is notable, given that participants were drawn from a general and not a targeted population (Salari and Enebrink 2018). Unlike the majority of other home-based programmes, Lifestart does not contain a group-based component thus the improvements in parent outcomes reported above are solely due to the monthly home visit, the 5-year relationship with the (same) family visitor and the age appropriate information resources provided at each visit and these relationships are key to the success of the programme (Butler et al. 2020). In contrast to other programmes, Lifestart has a highly manualised approach and very developmentally focussed content. Furthermore, Lifestart is aimed at – and is effective for – a non-vulnerable population and home visits do not need to be delivered with high intensity to be effective: measureable improvements in parent outcomes can be achieved through a single monthly visit. This study highlights the importance and continued relevance of universal home visiting and developmentally focussed parent programmes. In an era where universal services are either non-existent or have been severely cut back and resources available are used to target need, these findings reflect the benefit of sustained support in the early years to enhance the functioning of 'ordinary' parents in their caregiving role. To further capitalise on Lifestart's potential, a deeper

understanding of the role that parents and family visitors play in engaging with and delivering the programme would be very helpful.

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Ethical approval

Ethical approval for this study was granted by the National Research Ethics Service (Blackpool) 2006. All procedures performed were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

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