

Implementation quality of family literacy programmes: a review of literature

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Raising the literacy levels of young children is a major concern in many countries for which various programmes have been suggested. One of these is family literacy programmes. In previous meta-analyses wide variability in effects has been found and it has been suggested that this is partly caused by variability in implementation quality. This review aims to look at the implementation quality of family literacy programmes and its relationship with programme effectiveness. A search in relevant databases resulted in 46 studies. We found substantial, but variable information on implementation quality. Almost all studies provided information on parents' quantitative engagement in programmes, but fewer studies reported about characteristics of parent training, quality of engagement and transfer to daily life. Overall, the included studies that did provide information showed frequent use of intervention strategies and degree of participation was generally high. Parents increased their use of the learned techniques and engaged in more literacy activities outside programme time. However, few of the included studies analysed the relationship between implementation quality and programme effects and these studies provided mixed results, making it difficult to draw conclusions. Of critical note is the poor quality of the selected studies. Many had serious methodological flaws. Some of the measures used are not necessarily reliable indicators of implementation quality and results were at times presented with little precision. More robust evaluations of the effects of implementation quality are therefore needed.

Introduction

Children differ strongly in their emergent literacy skills when entering school and these differences have a profound impact on their subsequent reading and writing development (Burgess *et al.*, 2002; Spira *et al.*, 2005). Variability in emergent literacy skills is dependent on differences in children's home literacy environments (HLE; Bradley *et al.*, 2001; Scheele *et al.*, 2010), which refers to literacy-related activities that parents provide for young children, such as learning songs and poems, shared reading, teaching the alphabet (Sylva *et al.*, 2004). The frequency of activities such as these has been found to be positively related to various child outcomes (Bus *et al.*, 1995; Scarborough & Dobrich, 1994; Wood, 2002), even after controlling for background characteristics such as socio-economic status and ethnicity (Sylva *et al.*, 2004; Van Steensel, 2006). The quality of parent-child interaction during these activities has also been shown to be related to children's literacy development

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(Huttenlocher *et al.*, 2010; Rowe, 2012). Both quantity and quality dimensions of the HLE are, in turn, related to family background variables: previous research has, for instance, shown that the HLE in low-SES families is generally less stimulating than in high-SES families (Hoff, 2003; Van Steensel, 2006).

Family literacy programmes (FLPs) aim to stimulate the HLE of children growing up in disadvantaged contexts. Hannon (2003) defines them as ‘programmes to teach literacy that acknowledge and make use of learner’s family relationships and engagement in family literacy practices’ (p.100). This definition encompasses many possible programmes, which is reflected in various typologies used by researchers to describe FLPs (Nickse 1989, 1991; Cairney, 2002; Sénéchal & Young, 2008). However, as this review builds on previous reviews and meta-analyses that focus on programmes in which parents are trained to engage their children in literacy-related activities (Mol *et al.*, 2008; Manz *et al.*, 2010; Van Steensel *et al.*, 2011, 2012), we will focus on this type of programme, thereby excluding other types of programmes (e.g. programmes that involve only adult literacy education for parents, that impact children only indirectly).

So far, research on FLPs has been mainly directed towards measuring their effectiveness. Recently, Van Steensel *et al.* (2012) conducted a review of eight meta-analyses of effect studies and found that, overall, programme effects were positive and statistically significant. At the same time, however, there was considerable variability in effect sizes. This variability seemed partly as a result of differences in programme contents and approach combined with differences in family characteristics. In particular, the authors observed differential effects for at-risk families (i.e. low-SES and/or ethnic-minority families). Whereas ‘code-focused programmes’—in which parents and children practice isolated literacy skills—were effective for children from at-risk families, programmes focusing on shared reading showed small, sometimes even non-significant effects for these families. The authors suggest this raises doubts about whether at-risk families are capable of executing such shared-reading programmes optimally (cf. Mol *et al.*, 2008; Manz *et al.*, 2010). For shared reading to be effective, parents need to apply certain strategies, like scaffolding, which require them to be sensitive and responsive to their children’s input (Aram *et al.*, 2013). Previous research has shown that low-SES and ethnic-minority parents are generally not as skilled in this respect as high-SES parents (Sonnenschein & Munsterman, 2002; Korat *et al.*, 2008; Mol *et al.*, 2008). The observation of differential effects for low-SES groups stresses the importance of taking into account the way programmes are received and executed by families. Scholars use a variety of terms to refer to this, such as treatment fidelity (Lam *et al.*, 2013), implementation fidelity (Knoche *et al.*, 2010), programme fidelity (Powell & Carey, 2012), treatment integrity (Manz *et al.*, 2010) and implementation quality (McElvany & Van Steensel, 2009). For the sake of clarity, we will use the term implementation quality.

There seems to be a growing interest in the issue of implementation quality among researchers, practitioners and policy makers, not only in the field of family literacy (Bryant & Wasik, 2004; Powell & Carey, 2012), but across a range of fields. In their much-cited review of over 500 studies on (mental) health prevention and promotion programmes for children and adolescents, Durlak and DuPre (2008), for example, found strong support for the importance of implementation quality in determining

programme effectiveness. They conclude that ‘the assessment of implementation is an absolute necessity in programme evaluations. Evaluations that lack carefully collected information on implementation are flawed and incomplete’ (Durlak & DuPre, 2008, p. 340).

How can implementation quality be defined in the context of FLPs? Recently, Powell and Carey (2012) identified three main variables: delivery, receipt and enactment, each element containing a quantity as well as a quality dimension (see Table 1 for a concise overview of the operationalisation of these variables). Drawing from a well-known family literacy intervention, Dialogic Reading (Whitehurst, n.d.), we will provide examples for specific elements within these three main variables. In Dialogic Reading, a parent helps her or his child to shift roles during story-book reading, whereby the child gradually becomes the storyteller and the parent assumes the role of listener. For this purpose, parents are encouraged to use the PEER sequence, in which they *Prompt* the child to tell something about the story, *Evaluate* the child’s response, *Expand* the child’s utterance by rephrasing and adding information, and *Repeat* the prompt to ensure the child has learned from the expansion (Whitehurst, n.d.). Parents are trained during group meetings with other parents, in which the teacher (or another professional) explains the main programme contents using various training techniques (delivery). Delivery of the programme can then be quantified as the number of hours of parent training. The quality dimension of delivery refers to the manner in which programme contents are communicated to parents: for example, do trainers use modelling, do they provide parents with positive feedback? Receipt is defined as the intensity and quality of parent engagement in the training and in programme activities. Attendance at training sessions is an

Table 1. Implementation quality framework (following Powell & Carey, 2012): elements, dimensions and aspects of implementation quality

Element of implementation quality	Dimension	Aspect
Delivery	Quality	Manner in which programme contents are communicated
	Quantity	Number and duration of training sessions
Receipt	Quality	Implementation of instruction during programme activities Understanding of programme components, acceptability and satisfaction
	Quantity	Attrition
		Attendance at training sessions Number of programme sessions/activities completed/hours of involvement in programme activities
Enactment	Quality	Quality of parent–child interaction during reading or other targeted activities outside programme time or after the intervention has ended, parents’ intentions to change their behaviour as a result of the intervention
	Quantity	Frequency of reading or other targeted activities outside programme time or after the intervention has ended

example of a measure of receipt quantity, whereas quality can be assessed by parents' use of targeted programme strategies, understanding of programme content and their engagement during programme activities with their child. In our Dialogic Reading example, receipt refers to how often parents engage in Dialogic Reading sessions with their child (quantity) and to their application of the PEER sequence during these sessions (quality). Enactment pertains to the degree to which participants use the gained knowledge and skills in their day-to-day life. This entails, for instance, frequency and quality of reading outside of programme time. In our Dialogic Reading example, enactment could be measured by parents' use of Dialogic Reading techniques during other (i.e. non-Dialogic Reading) activities (quality), and by parents' engagement in shared-reading activities after the intervention has ended (quantity).

In review studies so far, little systematic attention has been given to how FLPs are implemented and to what extent implementation quality is related to effectiveness. In one meta-analysis, Sénéchal and Young (2008) reported that in the effect studies they included, information on implementation quality was mostly lacking. In their meta-analysis of home- and centre-based interventions, Blok *et al.* (2005) were able to include implementation quality as a moderator variable. They found that it was not related to programme effects. However, the authors did not clearly define what they meant by implementation quality and how this was measured in the included studies. Manz *et al.* (2010), finally, concluded that nearly 70% of the studies in their meta-analysis of FLPs included measures of implementation quality. The authors described the methods with which implementation quality was monitored in the studies they included, but they did not elaborate on the actual implementation quality, nor did they examine relationships between implementation quality and programme effects.

In summary, although implementation quality is acknowledged to be a key feature in FLP effectiveness (Bryant & Wasik, 2004; Manz *et al.*, 2010; Van Steensel *et al.*, 2011; Powell & Carey, 2012), systematic information on programme implementation is lacking. In the current review, we therefore focus specifically on the issue of implementation quality and its relation to programme effects. We argue that knowing how FLPs are executed and how implementation is related to programme outcomes might help in better understanding the mechanisms behind the differential effects described earlier and possibly in better tuning programmes to the practices of certain target groups.

Research questions

The purpose of this review is to determine what is known about the implementation quality of FLPs and about its relation to programme effectiveness. Consequently, we formulated two research questions:

RQ1	What information does current research provide about the implementation quality of FLPs, in terms of delivery, receipt and enactment?
RQ2	What information does current research provide about the relationship between implementation quality and the effectiveness of FLPs?

Method

Literature search

For this review, we conducted literature searches in PsycINFO, ERIC and LLBA using four groups of keywords. (1) Literacy: emergent literacy, family literacy, beginning reading, early reading, reading readiness, reading readiness tests, pre-reading experience, reading programmes, reading ability, reading skills, phonological awareness, oral reading, reading aloud to others; (2) Context: home visits, home, homes, family, family environment, family programmes, family–school relationship, families, parents, parenting skills, parent role, parents as teachers, parent–child relationship, parent–school relationship, parent–teacher cooperation, parent participation, mothers, mother, fathers, father, grandparents, siblings; (3) Intervention: early intervention, reading programmes, family programmes, home programmes, non-school educational programmes, programmes, programme design, programme development, programme effectiveness, programme evaluation, programme implementation, programme improvement, training, instructional effectiveness; (4) Children: early childhood education, preschool education, Grade 1, Grade 2, primary education, nursery schools, kindergarten, early childhood education, preschool children, preschool education, elementary school students, primary education, child development, young children, children, child, kid, kids, girl, boy. The search was limited to the period between the year 2000 and 2013.

Studies reviewed were included according to the following criteria:

- (1) The study involved research into the implementation quality of an FLP. We define implementation quality following Powell and Carey (2012). Studies were included if they provided information on delivery, receipt and/or enactment of a programme. We define FLPs as programmes that teach parents and/or other family members to engage in literacy-related activities with their child in order to support their children's literacy development;
- (2) The intervention was aimed at stimulating either emergent or more advanced literacy abilities, where literacy abilities can be understood as code-focused (abilities needed to decipher written language, e.g. letter identification, concepts about print and phonological awareness) and/or comprehension-focused (e.g. vocabulary, narrative comprehension, reading comprehension and story-telling; Whitehurst & Lonigan, 1998; Van Steensel *et al.*, 2011);
- (3) The study focused on children in the range of preschool until the end of primary school.

The steps taken during the selection procedure are summarised in the flow chart presented in Figure 1. All titles were screened on title and abstract, applying the inclusion criteria described above. In this step of the selection process we excluded studies that were not based on actual research (e.g. theoretical or position papers), did not cover the subject of family literacy, or specifically targeted children with impairments. This latter group of children was excluded from this review, because they can be assumed to require very specific types of interventions. After this initial screening, 192 studies remained. By full text scanning and/or reading 138 studies

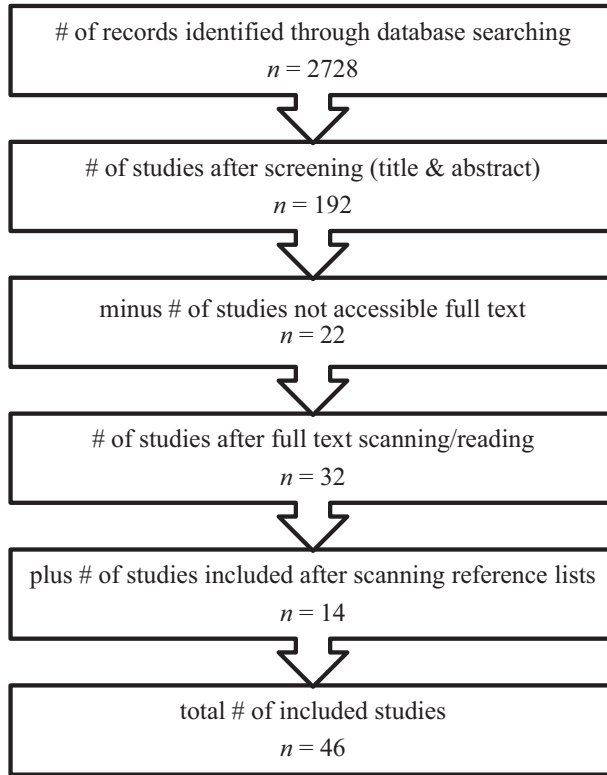


Figure 1. Flow chart of study selection process

were excluded because they either did not involve an intervention or they did not address implementation quality. The search resulted in an initial selection of 32 studies. Subsequently, we scanned reference lists of recently published meta-analyses on the effects of FLPs (Landry & Fischel, 2008; Lonigan *et al.*, 2008; Mol *et al.*, 2008; Sénéchal & Young, 2008; Manz *et al.*, 2010; Piasta & Wagner, 2010; Van Steensel *et al.*, 2011) and reference lists of the studies included so far. In total, we selected 46 individual studies.

Data extraction

Data extraction was aided by the use of an existing coding scheme, Strengthening The Reporting of OBservational studies in Epidemiology (STROBE) developed by Vandembroucke *et al.* (2007). This scheme requires specifying bibliographical information, research questions, methods, results, conclusions, limitations and generalisability. It was further adapted for the purpose of our review study by adding information on the measures and results regarding the three elements of implementation quality (delivery, receipt and enactment) and the relationship between implementation quality and programme effects. Note that, in this review, we define programme effects as child outcomes. Parent outcomes are incorporated in the concept of implementation quality, either as receipt or as enactment (see also Table 1).

Data analysis

We took four steps in analysing and presenting our selected body of studies. First, we categorised the various research designs that were employed, based on taxonomies common in the methodological literature (Cohen *et al.*, 2007). Second, we made descriptions of the interventions that form the subject of the selected studies [see online Appendix S1 (for access see Supporting Information at the end of the paper)], answering the following questions: ‘Who delivered the intervention to parents?’, ‘What kinds of materials and/or techniques were used?’, ‘What age/SES/ethnic group was the programme targeting and what were desired intervention effects?’ Third, we summarised the studies with respect to the methods, analyses and results regarding three elements of implementation quality: delivery, receipt and enactment (research question 1; see Table 1). Finally, we identified studies focusing on the relationship between implementation quality and programme effects (research question 2). As an example, the outcome of our coding process for a study on Dialogic Reading is depicted in online Appendix S2 (for access see Supporting Information at the end of the paper).

Results

In Table 2, an overview is provided of included studies, their designs and sample sizes. Additionally, this table shows which of the elements (delivery, receipt, enactment) and dimensions (quality, quantity) of implementation quality these studies reported, if the studies provided information regarding the relationship between implementation quality and programme effects, and what the general outcomes were (i.e. positive, negative, mixed or unresolved). The latter qualifications are intended as global indicators and will be elaborated below. They are primarily based on the conclusions as formulated by the authors themselves. However, when the authors were not explicit in their interpretation of the findings and when the results were clearly positive or negative, we added our own qualification. When this was not the case, we indicated results by a question mark (see Table 2). The quality and quantity dimensions of receipt both consist of multiple aspects and, therefore, the outcomes as shown in Table 2 for each dimension (+, – or +/-) can be seen as a summary of the findings for these different aspects. For example, when a study found positive results for adherence to programme strategies (receipt quality aspect 1) and mixed results for programme understanding (receipt quality aspect 2), results for the quality dimension of receipt are depicted by a plus/minus sign, indicating mixed results.

Designs

Five different categories of research designs could be distinguished. Most studies ($n = 21$) followed an experimental design, in which one or more experimental conditions were compared with one or more control conditions, random allocation of children or groups to conditions was applied, and both pre- and post-tests were administered. The second most applied research design was quasi-experimental ($n = 15$). These studies were mostly characterised by a comparison of experimental

Table 2. Overview of included studies and summary of implementation quality outcomes

No.	Author 1	Year	Programme	Design	N	Delivery		Receipt		Enactment		RQ2
						Qual	Quan	Qual	Quan	Qual	Qual	
1	Anderson	2005	PALS	CS	?	+						
2	Aram	2013	no name	E	58	+		+		+		+/-
3	Barbre	2003	Bridge	PP	60			+/-?		?		
4	Bierman	2008	HS REDI	E	356							
5	Blom-Hoffman	2007	DR	E	18	+/-		+		+		
6	Brannon	2012	DR	QE	40					+		
7	Briesch	2008	DR	SSMB	6	+/-		+		+/-		
8	Casey	2011	PR	SS	6	+		+		+		
9	Chow	2003	DR	E	86			+		+		
10	Dever	2002	FLB	PP	2340	+/-		+				-
11	Doyle	2011	no name	QE	45	+		+		+		
12	Faires	2000	BIB	QE	8			+/-		+/-		
13	Fiala	2003	PR	QE	3	+		+/?				
14	Fielding-Barnsley	2003	DR	QE	49			+		+		+/-
15	Hannon	2006	REAL	E	176	+		+/-				
16	Hargrave	2000	DR	QE	36			+/?				-
17	Hebbeler	2002	PAT	CS	81	+	+/-	+/-		-		
18	Hirst	2010	REAL	E	16	+		+(-)		+		+
19	Huebner	2000	DR	E	141	+		+		+/-		
20	Huebner	2005	DR	E	125	+		+		+		+
21	Jordan	2000	EASE	E	248	+		+		+		
22	Justice	2002	no name	PP	15	+		+		+		+/-
23	Kagiticbasi	2001	HIPPY	QE	280			+		+		
24	Knoche	2010	GR	QE	?	+						
25	Lam	2013	PR	E	195	+		?				+
26	Landry	2012	PALS	E	264	+		+		+/-		
27	Levin	2012	no name	E	124	+		+		+/-		
28	McElvany	2009	BPCRP	QE	32			+				+/-

Table 2. (Continued)

No.	Author 1	Year	Programme	Design	N	Delivery		Receipt		Enactment		RQ2
						Qual	Quan	Qual	Quan	Qual	Quan	
29	Morrison	2009	HELP	QE	146			+		+		+
30	Murad	2000	PR	E	48		+/-					
31	Rasinski	2005	PR	E	30		+			+		
32	Resetar	2006	PR	PP	5		+			+		
33	Reutzel	2005	WTG	QE	144		+/-			+		
34	Saint-Laurent	2005	no name	E	108		+			+		+
35	Scott	2010	IY+SPOKES	E	672		+		+/-	+		
36	Sheridan	2011	GR	E	217	+			+/-			-
37	Strouse	2011	DR	E	81		+/-		+/-	+		+/-
38	Sundman-Wheat	2012	LC	E	26		+		+			+/-
39	Sylva	2008	IY+SPOKES	E	122				+/-			+/-
40	Tardáguila-Harsh	2007	DR	SSMB	4		+/-		+			
41	Van Tuijl	2001	OO	QE	123				+			-
42	Van Tuijl	2004	OO	QE	30				+	+/-		
43	Van Tuijl	2002	OO	QE	300				+			
44	Wagner	2002	PAT	E	665				-			+/-
45	Wagner	2003	PAT	PP	238					+		
46	Yaden	2000	no name	QE	50				+/?			?

Notes: Qual = Quality, Quan = Quantity. Abbreviations of the programmes: PALS = Parents As Literacy Supporters; HS RED1 = Head Start REsearch based Developmentally Informed; DR = Dialogic Reading; FLB = Family Literacy Bags; BIB = Books in Bags; PR = Paired Reading; REAL = Raising Early Achievement in Literacy; PAT = Parents as teachers; EASE = Early Access to Success in Education; HIPPY = Home Instruction Program for Preschool Youngsters; GR = Getting Ready; BPCRP = Berlin Parent-Child Reading Program; HELP = Home Education Learning Program; WTG = Words to Go; IY+SPOKES = Incredible Years + Supporting Parents on Kids Education in Schools; LC = Letter Cards; OO = Opstap Opnieuw. Abbreviations of the designs: CS = Case-study; E = Experiment; QE = Quasi-experiment; PP = Pre- and post-test studies, no control group; SSMB = Single-subject multiple-baseline; SS = Single subject. Symbols indicating results: + = positive; +/- = mixed; - = negative; +(-) = mostly positive, some negative; ? = unclear/undecided.

and control conditions as well as by pre- and post-tests, but they differed from the first category in that no randomisation was applied. The third category consists of experimental group only, pre-test–post-test studies ($n = 5$). Single-subject studies ($n = 3$) constitute the fourth category, in which students' proficiency or development during and/or after participation in an intervention was compared with their proficiency/development before the intervention (the 'baseline'). The fifth category involves case studies ($n = 2$), that is, descriptive, exploratory analyses of FLPs, in which observations and interviews were used.

Interventions

The 46 studies covered a total number of 24 different interventions. A number of these interventions were the subject of more than one study. Ten studies involved Dialogic Reading interventions. Paired Reading interventions are also well represented by a total of six studies. The Opstap Opnieuw intervention was reported on in three studies, as was the Parents as Teachers programme. The following interventions were represented by two studies: 'Parents As Literacy Supporters, Getting Ready, Raising Early Achievement in Literacy' and 'Incredible Years combined with Supporting Parents on Kids Education in Schools'. The remaining interventions occurred only once.

Implementation quality: delivery, receipt and enactment

Delivery. Delivery refers to the transfer of main programme contents from trainers to parents. The quality dimension of delivery reflects the manner in which programme contents are communicated to parents, whereas the quantity dimension involves the number of training sessions provided and their duration.

In almost half of the selected studies ($n = 21$), researchers themselves delivered the intervention. In these studies delivery was not systematically analysed, likely because the researcher was assumed to transfer the programme as intended, and programme delivery was described as part of the intervention design and research procedure. Consequently, these studies are not described here and we can draw no conclusions on implementation quality regarding delivery for these studies.

In 11 studies, teachers were delivering the training to parents. In the remaining studies ($n = 14$), others delivered the intervention: so-called 'facilitators', 'intervention coordinators' and 'parent educators', who generally held an academic degree, had experience in education and/or in working with parents and/or had received additional training.

In few of the studies in which teachers or others than researchers delivered the intervention, researchers reported on the systematic measurement of programme delivery (only three out of 24). In all three studies delivery was measured by video observations of trainers and one study additionally employed trainer interviews. In two studies (Knoche *et al.*, 2010; Sheridan *et al.*, 2011) experimental teachers' behaviours were quantitatively compared with those of comparison teachers who acted as trainers in another type of parent intervention. Overall, observations showed significantly more frequent use of intervention strategies as well as significantly higher levels

of teacher quality in experimental than in comparison conditions. In a study by Hebbeler and Gerlach-Downie (2002), a qualitative approach was employed. On the basis of video observations of home visits, the authors in this study concluded that the programme was implemented with considerable fidelity. Home visitors carried out the activities as instructed and they did so relatively consistently. In the interviews, however, home visitors reported that during training they focused on their social support role and placed little emphasis on changing parenting behaviour, even though this was an explicit goal of the programme. They gave two reasons: they wanted to prevent parents from feeling pressured and they were ambivalent about their own level of parenting expertise (Hebbeler & Gerlach-Downie, 2002). This finding indicates that trainers sometimes can feel reluctant to endorse certain programme components. Whether this problem occurs in other interventions with similar target populations is hard to determine given the dearth of data on delivery quality.

Two of the above-mentioned studies also provide results on quantity of delivery, but these coincide with results on receipt quantity. Because the studies in which delivery was systematically measured made use of home visits, the number of home visits realised can also be seen as a measure of parental attendance, which is an indicator of receipt quantity. Therefore, we will discuss these outcomes in the next section.

Receipt. In 44 studies researchers explicitly reported on the measurement of receipt and its outcomes. Like delivery, receipt also has a quality and a quantity dimension. The former entails the following aspects: (i) parents' adherence to programme instructions, (ii) parents' self-reported understanding of the programme, and (iii) acceptability of the intervention. In 30 studies the quality of programme receipt was measured (see Table 2), and in 23 of these studies, positive results were found. The quantity dimension involves (i) attrition, (ii) attendance at training sessions (i.e. number of group meetings attended and/or home visits realised), and (iii) number of programme activities completed/hours of involvement in programme activities. Receipt quantity was measured in 42 studies. In 24 of these studies positive results were found. Outcomes for all quality and quantity aspects distinguished will be described below.

Quality. Only one third of the studies ($n = 17$) reported on the extent to which parents implemented learned procedures and strategies during programme activities. This was measured by a variety of instruments, audio-recordings being the most common, and reported to be high across most interventions. In seven studies the authors made a comparison between programme strategy use in experimental versus control conditions and, in six studies, a statistically significant difference in favour of experimental group parents was reported. In one study, the difference between conditions was not significant, however, strategy use did increase over time.

In another study no comparison was made across experimental and control conditions, however, the authors reported a significant increase in Dialogic Reading strategies for the experimental group parents over time. In eight studies, authors did not compare across conditions, nor reported development over time, however, they did report overall strategy use. For example, in a study by Sundman-Wheat (2012), on average, parents completed a large portion of the intervention correctly with all

groups evidencing over 80% correct procedural steps. Finally, in one study, no exact numbers regarding strategy use were reported. The authors state that, based on home visit interviews, parents followed programme instructions in the vast majority of cases (Aram *et al.*, 2013).

Understanding of programme content and satisfaction were measured and reported on in 22 studies. The most common measures were parent satisfaction questionnaires, administered at the end of the programme. In seven studies this aspect was measured by means of a standardised questionnaire, the Intervention Rating Profile (IRP-15; Witt & Martens, 1983), in which parents are instructed to indicate their (dis)agreement with statements such as: ‘The intervention would be practical in the amount of time required to use it’, ‘I understand how to use this intervention’ and ‘I have the skills necessary to implement this intervention’ (Briesch *et al.*, 2008, p. 982). Parents found the programme instructions easy to implement, with only one exception: in the Words-to-Go programme many parents expressed problems with programme instructions (Reutzel *et al.*, 2005). In Words-to-Go, parents and children work on applying phonics knowledge during ‘making and breaking’ words lessons (forming words and adding new letters to make a different word, e.g. making ‘an’ and adding the letter ‘d’ to make ‘and’) using paper letter cards. However, many participating parents expressed confusion about how many words to complete.

Regarding satisfaction, overall, parents found the programmes very valuable and useful, for example in terms of increased understanding of how to support their children’s literacy development, the sharing of information about community resources (e.g. libraries and computer training) and gaining insight into teaching and learning in the context of the curriculum that was used at their childrens’ schools. Almost all parents expressed that they would recommend the programme to other parents. For Family Literacy Bags (Dever & Burts, 2002), however, there was somewhat more variability in outcomes. Evaluation forms showed that, while most respondents (82%) enjoyed all of the books offered, just under half (45%) enjoyed all of the extension activities (e.g. writing activities).

Across all primary studies, a very small proportion of parents expressed practical difficulties in executing programme activities because of time restrictions (6% of parents in a study by Hannon *et al.* (2006) experienced difficulties combining family and working life with programme participation), and in a study by Morrison (2009), few difficulties were reported by parents regarding them following session protocols.

Quantity. Attrition, that is, families untimely terminating programme participation, was measured and reported on in 31 studies. We calculated attrition percentages based on the total number of parents that were invited to participate in the intervention and the number of parents dropping out before the end of the programme. Across the 31 studies, the average drop-out of parents was relatively low (11.3%). In four cases, none of the participating parents dropped out (Faires *et al.*, 2000; Rasinski & Stevenson, 2005; Tardáguila-Harth, 2007; Hirst *et al.*, 2010). In the other cases, attrition rates varied from 1% (Chow & McBride-Chang, 2003) to 60% (Wagner *et al.*, 2002). Six studies suffered from attrition that was quite high. In a total of six studies (four of which suffered from high attrition), researchers investigated whether the families leaving the programme differed significantly from the parents who

continued. Parents participating in Getting Ready (Sheridan *et al.*, 2011) and Parents As Literacy Supporters (Landry *et al.*, 2012) who dropped out, did not differ significantly from those that remained on key demographic characteristics, such as gender and primary language used at home. In Opstap Opnieuw (Van Tuijl *et al.*, 2001; Van Tuijl & Leseman, 2004), attrition was 4% and concerned more often Moroccan than Turkish families (7% vs 2%). In the Berlin Parent–Child Reading Program (McElvany & Artelt, 2009) participation in the programme was found to be selective. Parents in the drop-out group were more likely to be of lower socio-economic background and more often were single parents. The intervention with the highest attrition rate (as reported by Wagner *et al.*, 2002) was studied in more detail in an exploratory follow-up study (Wagner *et al.*, 2003). The authors found that high attrition could be partly explained by the research design. Where programme participation is usually self-selected (only motivated parents take part), the researchers made additional recruitment efforts, leading to the inclusion of parents that would not normally participate. Moreover, the parents recruited did not know whether they would be selected for the experimental or control group (Wagner *et al.*, 2003). Taken together, according to the authors, this led to higher than usual attrition. Furthermore, the study suffered from selective attrition, as, for example, African Americans were more likely than participants of other races or ethnicities to receive no home visits and participants who were on average younger and lower educated were more likely to drop out after having participated in at least one home visit (Wagner *et al.*, 2003).

Seven studies reported on the reasons parents had for leaving the programme/study (Huebner, 2000; Van Tuijl *et al.*, 2001; Justice *et al.*, 2002; Fiala & Sheridan, 2003; Resetar *et al.*, 2006; Scott *et al.*, 2010; Sundman-Wheat, 2012). The most common reason parents reported was that they lacked time to participate in the programme because of other obligations, followed by moving out of the area.

All but one study (McElvany & Artelt, 2009) included information on mode and dosage of parent training. Parent training was delivered in various ways, such as through group meetings, home visits and individual training sessions at (pre-)schools. Across these different delivery modes, attendance figures were reported in 32 studies. At times it was impossible to draw conclusions on attendance rates, as a number of studies did not provide information on the intended number of training sessions. Some studies reported percentages of parents attending all group meetings, others showed the range of parents attending each session and some researchers reported no figures but merely stated their general impression.

Attendance was reported to be relatively high on average, although results show considerable variability. Six studies mention the average percentage of sessions attended by parents, ranging from 40% (Sylva *et al.*, 2008) to 83% (Van Tuijl & Leseman, 2004) with a mean of 67%. Mean percentages of parents attending all training sessions ranged from 27% (Scott *et al.*, 2010) and 89% (Doyle & Zhang, 2011) up to a 100% attendance (Faires *et al.*, 2000; Rasinski & Stevenson, 2005; Casey & Williamson, 2011). The fact that these last three studies included a relatively small number of participating parents (four to six) and/or few group meetings (one to two), likely contributed to the reported 100% attendance. We also identified studies that suffered from low attendance rates. In a study by Reutzell *et al.* (2005), for

example, 65% of parents attended one out of three planned training sessions. (The authors do not state whether the other parents attended none of the sessions, or all of the sessions. The former is more likely, however, as the authors argue that attendance was not as high as anticipated). The authors did not report reasons parents had for non-attendance. In a study by Scott *et al.* (2010), a third of the parents did not attend any of the group meetings. The authors suggest that maximum attendance was unlikely given the fact that over half of the participants were single parents and nearly half were employed (Scott *et al.*, 2010). An unpublished qualitative study of non-engagers in this particular programme corroborated their assumption. The authors report that the major reason the parents gave for non-attendance was shortage of time. A study by Hannon *et al.*, (2006) on Raising Early Achievement in Literacy, showed variability in attendance (although the authors do not report how many meetings were organised). Most parents (86%) were reported to have attended at least one parents' meeting or family event, half attended three or more, and a small number of parents seemed to participate less regularly (no programme activities conducted between home visits). These were families that were experiencing domestic difficulties, such as splitting from a partner. In addition, 4% of parents had felt apprehensive before attending meetings, the same proportion said they preferred home visits and 3% said that accessing meetings was difficult because of work commitments (Hannon *et al.*, 2006).

In only four of the 11 studies that included home visits in their training, the number of visits realised was stated. In three studies exact numbers were reported, indicating positive results [in a study by Sheridan *et al.* (2011), parents completed a mean of 8.35 home visits over 2 years, the intended number of visits being four per year; in a study by Tardáguila-Harth (2007), all four parents participated in two individual training sessions that lasted approximately one hour each; in a study by Van Tuijl and Leseman (2004), 73% of the planned home visits took place]. Hebbeler and Gerlach-Downie (2002), however, reported that some families received far less than the anticipated number of visits. The authors do not report on how many home visits were realised exactly. A number of participating families showed to be minimally engaged in the home visits and did not keep appointments (Hebbeler & Gerlach-Downie, 2002). The authors argue that some of these families needed a more comprehensive approach than a programme focused on the child can deliver:

The families were dealing with many other issues besides parenting. Over the course of the three years, they experienced separation and divorce, troubled relationships, drug addiction, domestic violence, a drive-by shooting that left a house riddled with bullets, incarceration, and attempted suicide. Many of the case study families were very poor and living in inadequate housing. (Hebbeler & Gerlach-Downie, 2002, p. 48)

Finally, in four studies, training was conducted by videos and written instructions (Blom-Hoffman *et al.*, 2007; Bierman *et al.*, 2008; Briesch *et al.*, 2008; Strouse, 2011). In the studies by Blom-Hoffman *et al.* (2007), Briesch *et al.* (2008) and Strouse (2011), all experimental group parents were trained by viewing a Dialogic Reading video. For the study by Bierman *et al.* (2008) no information was provided on (reported) use of the training materials.

The number of programme sessions or activities completed and/or the hours of involvement in programme activities were reported on in 27 studies. A variety of instruments were used, record books kept by parents being the most common. However, in a considerable number of studies (12 out of 27), authors' impressions were stated and no exact reports were provided on how many activities had been completed by parents, or on the total number of activities that parents were supposed to complete (the intended intervention dosage). In these cases, no firm conclusions can be drawn regarding compliance. In the remaining studies, this aspect of implementation quality was reported to be fairly high across interventions. Completion of activities ranged from 80% to 100% with an average of 89%. In two studies on Opstap Opnieuw (Van Tuijl, 2002; Van Tuijl & Leseman, 2004), for example, records kept by trainers show that the programme was overall very well implemented, especially in the Turkish-Dutch group: 93% of the prescribed activities were carried out. For the Moroccan-Dutch group this percentage was a little lower with 84% of activities completed.

Enactment. Enactment pertains to the degree to which participants use the gained knowledge and skills in their day-to-day life, during and after the intervention. This entails quality and frequency (quantity) of shared reading or other targeted activities outside of programme time. In 26 out of 46 studies researchers reported on how they measured enactment of the intervention by parents and on the results of these measurements. A few studies measured enactment a few months (with a maximum of 7 months) after the intervention had ended, but long-term effects on enactment were investigated in only one study (6 years after the intervention had ended).

Quality. The quality dimension of enactment entails the quality of parent-child interaction during shared reading or other targeted activities outside of programme sessions. Quality of enactment also pertains to intentions reported by parents to change their behaviour as well as their reported behavioural change, as a result of the intervention.

In 23 studies, information was provided on this dimension of enactment. Many measures ($n = 12$) consist of post-intervention video- or audio-tapings of parent-child interaction. Another commonly used measure is parent self-report ($n = 12$). Overall, parents were observed or reported to use the learned techniques more often in interaction with their child at the end of the programme as compared with the beginning of the programme. In two studies (Rasinski & Stevenson, 2005; Strouse, 2011) a transfer was reported from using learned strategies or procedures during programme activities to other activities. In the latter study, reporting on the implementation of Dialogic Reading, 89% of the parents indicated that they had noticed themselves using questioning techniques learned during the intervention while reading story-books that were not included in the intervention, and 90% indicated they also used these techniques during other activities. In a half-year follow-up with a smaller group of parents ($n = 8$), all parents indicated having continued to use these questioning techniques (Strouse, 2011). However, whether parents that did not participate in the follow-up differed significantly from parents that did, is not reported in this study. In a study by Blom-Hoffman *et al.* (2007) on Dialogic Reading, parents

maintained their use of Dialogic Reading strategies when reading with their preschool children 12 weeks after the treatment was completed, as coded from video observations of reading sessions.

Not all studies provided unequivocal support for positive enactment results. In two other studies by Brannon and Dauksas (2012) and Tardáguila-Harth (2007), both on Dialogic Reading, positive enactment results were suggested. Both studies showed that parents continued implementing Dialogic Reading techniques during shared-book reading after the intervention. However, in neither case did the research designs allow definite conclusions on intervention effects, as the study by Tardáguila-Harth (2007) did not include a control group and Brannon and Dauksas (2012) had not applied randomisation. Mixed outcomes were found for Parents as Literacy Supporters (Landry *et al.*, 2012). While some of the intended behaviours had increased at follow-up (i.e. children's behavioural responses), others had decreased slightly (i.e. mother's responsiveness). In a study by Levin and Aram (2012), analyses of videotapes showed that coaching parents affected the targeted activity only. Parents did not generalise the learned principles of mediation (story-book reading mediation, writing mediation and visuo-motor mediation) to other, non-coached, parent-child activities (i.e. shared reading, writing or visuo-motor activities outside programme time). Van Tuijl and Leseman (2004) found mixed results regarding quality of enactment for the Opstap Opnieuw intervention. Although positive changes in mothers' socio-emotional support were sustained over time, this was not the case for the cognitive quality of interaction. Hebbeler and Gerlach-Downie (2002) presented even fewer positive outcomes. Although parents were very positive about the 'Parents as Teachers' programme, they did not believe it had greatly affected their parenting. Parents reported wanting to use certain concepts in their parenting, but they did not actually do so.

Quantity. The quantity dimension of enactment refers to the frequency of shared reading or other targeted activities outside of programme time. In eight studies, information was provided on this dimension of enactment. Most measures relied on parent self-report, in the form of parent questionnaires or parent interviews. Overall, experimental parents (were) reported to engage in significantly more literacy activities than control parents. However, four out of these eight studies did not explicitly report the number of activities outside of programme time. This is illustrated in a study by Yaden *et al.* (2000), in which parent observations during home visits showed that many parents of Latino descent had established read-aloud routines at home, despite the frequent finding that story-book reading is not a normal practice among Latino families. However, the authors reported no precise frequencies of shared-book-reading sessions. The remaining five studies did provide precise quantitative data. In three of these studies, participants reported significantly more literacy activities outside of programme time and/or at the end of the intervention period compared with parents who did not participate (Saint-Laurent & Giasson, 2005; Morrison, 2009; Sundman-Wheat, 2012). In a study by Dever and Burts (2002), however, no significant intervention effect was found on the frequency of home literacy activities outside of programme time. According to parents, the intervention did not change the number of literacy-related activities they did with their child, because they were already doing

the types of activities suggested by the programme. Another study by Hannon *et al.* (2006) showed positive enactment results for a minority (34%) of parents, who indicated that the frequency of literacy activities they engaged in with their children had increased, while for a majority it had not. Out of the parents that did not report an increase in literacy activities, most stated that they were already doing these activities at home before entering the programme.

Implementation quality and programme effects

The second question that guides this review involves the relationship between implementation quality and programme effectiveness, which was analysed in only one fifth of the studies ($n = 9$). In most of these studies the focus was on receipt ($n = 7$). One study targeted delivery and another examined enactment in relation to programme effects.

In two studies (Barbre, 2003; Landry *et al.*, 2012), indications for positive effects of implementation quality were found. Barbre (2003) analysed the relationship between effects of the Bridge programme and programme completion, and found larger language gains for students who had completed more than a specific number of programme activities. However, the author did not indicate whether this was a statistically significant difference. Landry *et al.* (2012) focused on enactment and, using mediation analysis, found positive effects of Parents as Literacy Supporters on children's verbal and non-verbal behaviour and engagement during a shared-reading task to be partly explained by positive changes in parents' shared-book-reading behaviours (i.e. praise, encouragement and 'language facilitation techniques', such as lead-ins and expansions) outside the programme. Furthermore, if parents spent less time just reading the text and focused more on such reading behaviours, this resulted in increases in their child asking questions about the story, which is presumed to enhance learning experiences during shared book reading. In addition, increases in parent's verbal techniques used to support their child showed to positively influence children's use of language and book-related gestures (e.g. pointing).

In three studies, no evidence was found for a significant relationship between programme implementation and effects. In a study by Hargrave and Sénéchal (2000) on a Dialogic Reading intervention, attendance and number of intervention books read by parents proved not to be significantly correlated with outcome measures. Sheridan *et al.* (2011) studied Getting Ready and included three measures of delivery: number of home visits received, use of training strategies and teacher effectiveness at initiating parental engagement. None of the measures was found to significantly moderate the effectiveness of the intervention. In the Opstap Opnieuw programme, Van Tuijl *et al.* (2001) found no clear and consistent effects of attendance at group meetings, number of home visits realised and number of activities completed on variability in child outcomes. According to the authors, a likely explanation for this finding is that most parents crossed a threshold of implementation after which further variation in degree of implementation did not affect programme efficacy.

The four remaining studies showed mixed results. In a study by Jordan *et al.* (2000) on Early Access to Success in Education, a positive effect was found of the rate of completion of intervention activities. Every completed activity was associated with

about a five-point increase in children's predicted language gains, as measured by subtests from the Comprehensive Assessment Program (CAP) language test. The authors also found attendance to be weakly but statistically significantly related to outcome measures. However, when other predictors were added to the regression model its effect was no longer significant (Jordan *et al.*, 2000). For Letter Cards (Sundman-Wheat, 2012), analysis of lesson plans (percentages of activities reported to be completed by parents) and observations of parents completing lessons, produced non-significant to minimal effects on child outcomes, although, according to the authors, this might have also been the result of the small sample size. In a study on Incredible Years combined with Supporting Parents on Kids Education in Schools (Sylva *et al.*, 2008), possible attendance effects (receipt) on children's word-reading scores were analysed. Regression results showed that frequency of attending programme sessions was positively related to parents' use of reading strategies at post-test. However, this effect did not transfer to children's reading scores. The authors remark that the low number of nil attenders made it difficult to robustly test attendance effects. Finally, Wagner *et al.* (2002) studied Parents as Teachers and found some evidence of a positive relationship between the number of home visits and child outcomes, but findings were not consistent across outcomes. The authors do not elaborate on this finding, however.

Discussion

Although accounting for implementation quality is important in any programme evaluation (Durlak & DuPre, 2008), it can be argued that it is of particular significance to FLPs. In previous meta-analyses of FLP effect studies (Manz *et al.*, 2010; Van Steensel *et al.*, 2011, 2012), it has been speculated that variability in implementation quality is partly responsible for the wide variability in effects found across studies. Against this background, Powell and Carey (2012) have suggested a framework for measuring implementation quality in FLPs. The aim of this study then was first of all to determine what information current research provides about the different aspects of implementation quality distinguished by Powell and Carey (research question 1). We found substantial differences in the amount of information provided across the elements of implementation quality that we distinguished. Moreover, the methodological rigor of some of the selected studies is questionable. We found several cases in which the measures used were not necessarily reliable indicators of implementation quality and where the results were presented with little precision.

Particularly noticeable is the scarcity of information on delivery. Whereas almost all studies provided information on receipt and more than half addressed aspects of enactment, only three reported on the systematic measurement of programme delivery. This was partly due to the fact that about half of the interventions were researcher-delivered. Still, in nearly all studies in which trainers were other than the researchers, no delivery information was provided. This element of implementation quality is important, however, for several reasons. First of all, parents cannot be expected to implement new techniques without sufficient training. The literature on parental involvement shows that trainers play an important role in engaging parents (Bakker *et al.*, 2013). However, since it requires many informational, organisational

and interpersonal skills for interventionists to take this role (Wagner *et al.*, 2000), it is important to monitor the extent to which trainers are able to apply such skills. In the three studies that did provide information on delivery, we found more frequent use of intervention strategies and higher levels of teacher quality in experimental compared with control conditions. However, we also found that trainers do not necessarily use intervention strategies as intended. Some trainers felt reluctant to endorse certain programme components because they wanted to prevent parents from feeling pressured. This might be a problem in other FLPs as well, but information on whether this is the case is lacking. It seems a prerequisite for successful delivery that trainers recognise the need for an intervention, believe that it will produce desired outcomes and feel confident in their ability to play their role (Durlak & DuPre, 2008). In turn, delivery can be expected to play a role in the other aspects of implementation as well. If transfer of programme contents to parents fails, they can hardly be expected to take in and carry out the programme as intended (Bakker *et al.*, 2013). This subject thus deserves more attention than it has received so far.

We found variability within elements of implementation quality as well, that is, certain aspects of receipt and enactment received more attention than others. When looking at receipt, the extent to which parents implement learned procedures and strategies during programme activities was reported on considerably less than quantitative variables such as activities completed or hours of involvement, although previous reviews (Mol *et al.*, 2008; Manz *et al.*, 2010; Van Steensel *et al.*, 2012) have suggested the former is a key variable in programme success. Lack of programme effects is partly attributed to parents not being able to apply the strategies originally intended by the programme developers. This difference in focus could be explained by the amount of effort required to measure both dimensions of receipt. Examining parental adherence to programme instructions requires observing parent–child activities, which is far more time-consuming and costly than self-reports, the latter being the most commonly used method of examining receipt. However, not assessing the extent to which parents implement learned procedures and strategies—which we have seen in the majority of the included studies—can result in evaluating the effects of an intervention as reported, rather than as performed (Knoche *et al.*, 2010). Understanding how programme contents are transferred from parents to children seems crucial for understanding variability in programme effects on children (Manz *et al.*, 2010; Van Steensel *et al.*, 2011, 2012) and allows for more tailor-made support to parents.

For studies that did address the quality of receipt, results were overall positive. Researchers usually observed an increase of targeted behaviours during programme activities within the intervention period and higher frequencies of targeted behaviours in experimental vs control groups. Furthermore, in most studies, procedures were strictly followed by the majority of parents, as measured by observations during parent–child activities. Additionally, parents generally found the programmes very valuable and useful. To what extent such observations are generalisable remains to be seen, however, given the relatively small number of studies reporting on this dimension. For quantity of receipt, we found that attrition was generally low and the number of programme sessions/activities completed and/or the hours of involvement in programme activities were reported to be fairly high. However, we also found a

number of instances where implementation was less optimal. This is particularly true for attendance rates, which showed considerable variability across studies, as well as for attrition, which was exceptionally high in some of the studies. Variability in attendance has also been observed in earlier studies (e.g. McElvany & Van Steensel, 2009). According to the limited information available in the current review, low attendance as well as attrition were mainly accounted for by (reported) time restrictions and families experiencing domestic difficulties (e.g. divorce, domestic violence). However, more in-depth information on attrition is largely lacking. Some of the studies that do go into this issue find that attrition is selective. It is more likely among socio-cultural minorities, which are often a main target group of FLPs. Information on the backgrounds of such selective attrition is essential, as knowing what makes parents drop out can help in finding ways to promote their engagement. As Manz *et al.* (2010) suggests, parents dropping out might be experiencing feelings of apprehension about entering the school and/or sharing 'private' information in front of the teacher and other parents. These authors reported low income or ethnic-minority families to be especially vulnerable to disengagement in interventions, as a result of a higher likelihood of negative educational experiences of parents (Dauber & Epstein, 1993) and their mistrust of professionals (Adams & Christenson, 2000).

The quantity dimension of enactment (e.g. the number of and/or hours spent on literacy-related activities outside of programme time), was reported on notably less than the quality of enactment (e.g. the quality of parent-child interaction during literacy-related activities outside of programme time). This seems partly induced by the variability in programme scopes. Studies focusing on quantity of enactment mostly involved programmes that aim to enhance the frequency of literacy-related activities in families (e.g. the Raising Early Achievement in Literacy project, Family Literacy Bags or the Saint-Laurent and Giasson intervention), whereas studies addressing enactment quality mostly aimed at improving the quality of parent-child activities (Dialogic Reading, Paired Reading). Notwithstanding, although the interest in enactment quality was mostly large, it still was the subject of no more than half of all studies. As both quantity and quality dimensions of the HLE have been shown to be related to child outcomes (Scarborough & Dobrich, 1994; Bus *et al.*, 1995; Leseman & De Jong, 1998; Desforges & Abouchaar, 2003; Hammett *et al.*, 2003; Sylva *et al.*, 2004), it seems important to include either dimension when examining programme enactment. Moreover, it can be assumed that programme effects on child outcomes are mediated by the extent to which they bring about change in parental behaviours in daily life (Fuligni & Brooks-Gunn, 2004).

In this review, results for quality of enactment showed that parents overall increased their use of the learned techniques outside of programme time and also applied such techniques more often than their control counterparts. Regarding quantity of enactment, parents participating in an intervention overall were reported to engage in significantly more literacy activities outside the programme context than parents who did not participate. Nevertheless, we also found considerable variability across studies. In addition to largely positive results, a few studies found that, while some target behaviours had increased at follow-up, others had decreased. Furthermore, a number of the participating parents did not engage in more literacy-related activities after the intervention had ended, while others did show such an increase.

Mapping such developments is highly relevant in analysing the long-term effects of FLPs on child outcomes. It can help in explaining why programme effects on children are (not) sustained.

As we argue that it is important for researchers to provide valid and reliable information on implementation quality, a number of critical notes can be made regarding the methodological quality of the selected studies. First, some of the measures used are not necessarily reliable indicators of implementation quality. For multiple aspects of implementation quality the most commonly used measure was parent self-report. Given the possibility of socially desirable answers, it is not unlikely that these results are positively biased. Second, we found that some of the results were presented with little precision. In a number of studies measuring completed activities, no exact data were provided, for example, on how many activities had been completed by parents, or on the total number of activities that parents were supposed to complete, which makes it impossible to accurately determine if parents' participation was as intended. With respect to enactment, some studies did not offer precise information on the frequency of activities outside of programme time.

Regarding our second research question on the relationship between programme implementation quality and programme effects we found that a limited number of studies—one fifth of those included—analysed this relationship. Thus, even though implementation has been shown to be a major factor in programme effects across a range of fields (Durlak & DuPre, 2008) and several authors suggest that this topic is particularly relevant in the field of family literacy (Bryant & Wasik, 2004; Van Steensel *et al.*, 2011; Powell & Carey, 2012), the relationship between implementation and effects is largely neglected. The outcomes of the studies that did analyse the relationship between both variables do not show a clear picture. While some studies established positive relationships, others did not find any effects or found mixed results. This variability might be partly due to methodological shortcomings. First of all, some studies were characterised by small sample sizes and limited variance in implementation quality, making it difficult to establish effects. Additionally, in some cases parent self-report measures were used, which have questionable validity when measuring implementation quality (see previously). These mixed results make it difficult to draw conclusions and thus call for more rigorous studies into the effects of implementation quality, using larger samples and more appropriate designs and measures. Such information is necessary to be able to decide which aspects of implementation are most vital in programme success.

Implications for research

As we have argued, it is important for researchers of FLPs to provide more insight in programme implementation quality. When examining implementation quality, the following should be taken into account. First and foremost, as none of the included studies measured all distinguished aspects of implementation quality, it is important to take an integral perspective on programme implementation quality instead of focusing on one or two isolated components. After all, the different aspects presented in this review are likely to be related. For instance, problems in delivery of programme contents from trainers to parents likely affect the way

parents understand these contents and transfer them to their children. As we have illustrated in this review, a framework such as the one provided by Powell and Carey (2012) provides a systematic method for covering important elements of programme implementation. Two issues are of particular importance. If researchers are not delivering the interventions themselves and are thus not fully able to control the way parents are instructed and trained, they should systematically measure and report on the process of intervention delivery; this element of implementation appeared to be highly under-researched. For the purpose of future reviews, we also recommend clearly outlining the programme implementation as intended (e.g. the targeted number of home visits), so that readers are able to judge whether implementation objectives are met.

Second, we recommend a more frequent use of direct measures of behaviour (i.e. video/audio observations) in addition to self-reports. This will aid in providing more valid indications of parent, child and trainer behaviours during training sessions and programme activities, which will also likely lead to more reliable analyses of implementation and programme effects.

Third, we recommend investing in more comprehensive studies of implementation effects. Using multiple indicators of implementation quality would not only make it possible to examine interrelationships between delivery, receipt and enactment (see our first recommendation), but would also enable researchers to determine the relative weight these different components have in explaining programme outcomes.

Fourth, we found that long-term effects on enactment, multiple years after the intervention had ended, were investigated in one study only. The ultimate goal of most FLPs extends beyond immediate learning effects for parents, towards long-term goals such as improving childrens literacy in general. Hence, it seems important to measure retention of enactment results in the long run.

Fifth, other researchers (Mol *et al.*, 2008; Manz *et al.*, 2010; Van Steensel *et al.*, 2012) hypothesised a relationship between parental SES and FLP implementation quality, based on the assumption that low-SES parents might not be as skilled as high-SES parents in implementing FLPs, as this requires applying certain strategies (e.g. being sensitive and responsive to children's input) that are less likely to be found in low-SES parents compared with high-SES parents (Sonnenschein & Munsterman, 2002; Mol *et al.*, 2008). However, only a few of the included studies offer insight into this issue. In six studies the relationship between parental SES and programme receipt was analysed. Three of these studies found no differential outcomes for diverse SES groups, whereas three studies found more positive outcomes for high-SES parents (although in one of these studies this finding was based on only one parent). Finally, one study also included enactment, but once again no differential outcomes were found. All in all, it is difficult to draw conclusions on the relationship between programme implementation quality and parental SES, which stresses the need for further research on this matter.

Bridging the literacy gap is one of the most important challenges in this age. FLPs can aid in bridging this gap (Sénéchal & Young, 2008; Van Steensel *et al.*, 2011). However, both for researchers and practitioners it is crucial to keep a close watch on the way FLPs are implemented. Durlak and DuPre (2008) suggest:

Assessment of implementation is essential for assessing the internal and external validity of interventions ... accurate interpretation of outcomes depends on knowing what aspects of the intervention were delivered and how well they were conducted. Negative results can occur if the program is not implemented sufficiently, or positive impact can be achieved through an innovation that, in practice, was very different from what was intended. (Durlak & DuPre, 2008, p. 328)

Finding and applying ways of comprehensively measuring implementation quality in terms of delivery, receipt and enactment, and scrutinising the relationship between implementation quality and programme effects remains a challenge for future family literacy research.

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SUPPORTING INFORMATION

Additional Supporting Information may be found online in the supporting information tab for this article:

Appendix S1: Description of included Family Literacy Program’s

Appendix S2: Analysis Scheme STROBE: Example of Data Extraction