Sanneke de la Rie

EFFECTS OF FAMILY LITERACY PROGRAMS

The Role of Implementation Quality

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The role of implementation quality

EFFECTEN VAN GEZINSPROGRAMMA'S
De rol van implementatiekwaliteit

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01

General introduction

The ability to read is of key importance for children's academic careers. Children who are early and proficient readers experience more print exposure and subsequent growth in various knowledge domains (Cunningham & Stanovich, 1997; Lonigan, Burgess, & Anthony, 2000). Children who experience difficulties at the onset of learning to read are likely to experience reading problems throughout their academic careers (Baydar, Brooks-Gunn, & Furstenberg, 1993; Torgesen, 2005). Specifically, these children read less, miss opportunities to develop reading comprehension strategies (Brown, Palincsar, & Purcell, 1986), are faced with texts that are too challenging for their abilities (Allington, 1984), and may acquire negative attitudes about reading itself (Oka & Paris, 1986). Reading difficulties have been associated with a broad range of negative consequences, including academic failure, low self-esteem, delinquency and unemployment (Heckman, 2006).

Large differences exist between primary school aged children in early reading skills and these differences have their origins early in life, as they are dependent on children's emergent literacy skills (Whitehurst & Lonigan, 2001). Early or emergent literacy refers to the skills and knowledge that are developmental precursors to reading and writing (Burgess, Hecht, & Lonigan, 2002; Spira, Bracken, & Fischel, 2005; Storch & Whitehurst, 2002). Researchers have identified three key emergent literacy skills that predict reading ability at primary school age: phonological awareness, print knowledge, and oral language (e.g., Lonigan, 2006). Phonological awareness refers to the ability to detect and manipulate units of oral language such as words, syllables, and onsets and rimes, print knowledge reflects the understanding of basic print concepts and letter identification skills, and oral language pertains to (listening/story) comprehension, vocabulary, and grammar (Foy & Mann, 2003; Lonigan, Burgess, Anthony & Barker, 1998).

Raising the literacy levels of young children is a major concern in many countries (Carpentieri, Fairfax-Cholmeley, Litster, & Vorhaus, 2011). In the Netherlands as well as in other countries, considerable numbers of children lag behind (Inspectie van het Onderwijs, 2018). At the completion of primary education, 35% of students show insufficient reading skills (Inspectie van het Onderwijs, 2018). In the first years of secondary education, 20–30% of students seem to lack sufficient reading skills to comprehend schoolbook texts (Hacquebord, Linthorst, Stellingwerf & De Zeeuw, 2004). These differences find their basis in differences at the onset of formal reading instruction. Research into early skill differences and consequences for children's academic achievements, has led to increased focus on prevention of early language delays, as opposed to attempting to close a gap that is already

in place (Driessen, 2013, Heckman, 2006). This shift is characterized by increased attention for the early childhood period (Roeleveld, Driessen, Ledoux, Cuppen & Meijer, 2011), both in policy and research.

The Home Literacy Environment as a Predictor of Early Literacy

When exploring factors influencing early literacy, research suggests that variables within the home environment may be of greater influence than those within the school context (Anderson, 2000; Lonigan & Whitehurst, 1998; Carter, Chard, & Pool, 2009, Joyner, 2014).

The Home Literacy Environment (HLE) is a strong predictor of children's language and literacy development (Roberts, Jergens, & Burchinal, 2005; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004) and refers to literacy-related activities that parents engage in with their children, such as singing songs and reciting nursery rhymes, shared reading, and teaching the alphabet (Sylva et al., 2004). It also pertains to opportunities in the home for children's independent explorations of literacy (e.g., presence of literacy materials or educational toys in the home) as well as to parents' literacy behaviors as they provide role models for their children (Justice, Logan, Işıtan, & Saçkes, 2016; Teale, 1986).

Various joint literacy-related activities were found to be positively related to child outcomes such as oral language skills and reading ability (Bus, Van IJzendoorn, & Pellegrini, 1995; Phillips & Lonigan, 2009; Sénéchal, 2006), even after controlling for background characteristics such as socio-economic status and ethnicity (Sylva et al., 2004; Van Steensel, 2006). Studies have shown that both the quantity of literacy-related activities offered, as well as the quality of parent-child interactions during these activities, predict children's literacy development (Huttenlocher, Waterfall, Vasilyeva, Vevea, & Hedges, 2010; Rowe, 2012; Sénéchal, Lefevre, Thomas, & Daley, 1998). A vast number of studies have been conducted to identify what constitutes "good" quality of parent-child interactions. For example, quantity and variety of parental speech (Hart & Risley, 1995; Hoff, 2003), sophisticated labeling (Weizman & Snow, 2001), scaffolding (Aram & Levin, 2001; Neumann, 2018), sensitive responsiveness (Landry, Smith, & Swank, 2006), and the use of abstract language (Sigel, 1970, 2002; Van Kleeck, 2008) are features that have shown to be important for fostering children's language and literacy abilities.

Parent Characteristics and the HLE

Both the quantity and the quality of the HLE have been found to vary across families. A main contributor to this variation is parental socioeconomic status (SES), which is operationalized

by parents' (often mothers') educational attainments, occupation, or household income. Higher-SES parents tend to talk more, use more diverse and complex language with their children, and show more sensitive, responsive behavior than lower-SES parents (Hart & Risley, 1995; Hoff, 2006; Leseman & de Jong 1998). As a consequence, preschoolers living in low-SES households often have more limited emergent literacy skills compared to their more advantaged peers (Hart & Risley, 1995). For example, they have smaller vocabularies, are less likely to recognize the letters of the alphabet, count to 20, write their names, or pretend to read a storybook than peers in high-SES families (Hart & Risley, 1995; Nord, Lennon, Liu, & Chandler, 2000).

Cultural background is another parent characteristic that is associated with variation in the HLE. This variation pertains to the type of parent-child interactions, as well as the type of literacy-related activities that are offered to children. In a study on shared book reading interactions in Surinamese-Dutch, Turkish-Dutch, and Dutch parent-child dyads, Bus, Leseman, and Keultjes (2000) reported that Dutch dyads paid more attention to making connections beyond the text. They also referred to children's life experiences more often. In Turkish-Dutch dyads, discussions of the procedure and paraphrasing the text were more prevalent. Naming of characters in illustrations occurred more often in discussions between Surinamese-Dutch parents and their children. Moreover, Surinamese-Dutch parents tended to be most restrictive and discipline-oriented towards their child.

Research has shown that the effect of culture and SES are confounded: differences between ethnic or cultural groups are partly governed by differences in, for example, educational levels (Rowe, Denmark, Harden, & Stapleton, 2016). However, there seem to be specific cultural effects on the HLE as well (Aud et al., 2013; Prevoo, Malda, Mesman, & van IJzendoorn, 2016). These culture-specific differences in the HLE might originate from various sources. For example, it has been suggested that parents' educational beliefs vary across cultures (Boyce, Innocenti, Roggman, Jump Norman, & Ortiz, 2010; Gunderson & Anderson, 2003) and that these beliefs result in different interaction patterns and different shared literacy-related activities (Baker & Scher, 2002; DeBaryshe, Binder, & Buell, 2000). For example, Gunderson and Anderson (2003) found that Chinese parents who had migrated to Canada held traditional beliefs about the development of emergent literacy skills, favoring rote memory, and drill and practice, while expressing disapproval of a learning-through-play approach. Furthermore, parents' own literacy experiences might influence parent-child interactions. Bus (2003) suggested that if parents do not view reading as a source of pleasure themselves, they might not engage in such practices with their children. Shared

book reading is indeed a literacy practice that is not shared by all cultures (Gunderson & Anderson, 2003; Boyce et al., 2010). Given their influence on the HLE, parent variables such as SES and cultural background are thus important to take into account when examining children's emergent literacy and language development.

Stimulating the HLE with Family Literacy Programs

Recognizing the strong and long lasting influence of parents as first educators of their children (Britto, Brooks-Gunn, & Griffin, 2006), a range of Family Literacy Programs (FLPs) have been developed. These programs aim to promote children's literacy development by stimulating the HLE, particularly in low-SES and ethnic-minority families. Hannon (2003) defines FLPs 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 sorts of programs, which is reflected in various typologies used by researchers to describe FLPs (e.g., Cairney, 2002; Nickse 1989, 1991). For example, Sénéchal and Young (2008) differentiated between school-based involvement (parental activities in the school environment), home–school conferencing (parent–teacher communication about children's literacy learning), and home-based involvement (literacy-learning activities provided by parents in the home).

In this dissertation the focus will lie on the latter type of FLPs, that is, those programs that encourage parents to engage their children in various literacy-related activities at home. These programs first of all aim to increase the frequency of such activities. Some focus on very specific activities, such as shared reading (Mol, Bus, de Jong, & Smeets, 2008; Zevenbergen & Whitehurst, 2003). Others depart from a broader conceptualization of the HLE and also include alphabet teaching and (emergent) writing activities (Aram, 2006; Landry et al., 2012; Reutzel, Fawson, & Smith, 2005; Sundman-Wheat, 2012), scrapbooks and literacy games (Hannon, Morgan, & Nutbrown, 2006; Saracho & Spodek, 1998), prompting boards (see De la Rie et al., 2016; Chapters 4 and 5), and songs and rhymes (Van Tuijl, Leseman, & Rispens, 2001). Many programs additionally aim to contribute to the quality of parent-child activities, for example by supporting the use of scaffolding techniques (Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004), decontextualized language or abstract talk (Serpell, Baker, & Sonnenschein, 2005; Van Kleeck, 2008), open-ended questions (Mol et al., 2008) and exposure to sophisticated vocabulary (Dickinson & Tabors, 2002).

Recently, effect studies of FLPs have been summarized in a number of meta-analyses (Manz, Hughes, Barnabas, Bracaliello, & Ginsburg-Block, 2010; Sénéchal & Young, 2008; Van Steensel,

McElvany, Kurvers, & Herppich, 2011). Certain programs proved to be effective for some subgroups of children, but not for others. More specifically, shared reading interventions were reported to be less effective for children growing up in low-SES and ethnic-minority families (Manz et al., 2010; Mol et al., 2008). Van Steensel et al. (2012) suggest this raises doubts about whether these families are capable of executing such programs optimally. Effective shared reading interactions are characterized by parental strategies such as scaffolding, which require parents to be sensitive and responsive to their children's input (Aram, Fine, & Ziv, 2013; Van Steensel et al., 2012). Previous research reported that low-SES parents demonstrated fewer of these behaviors compared to high-SES parents (Korat, Ron, & Klein, 2008; Mol et al., 2008; Sonnenschein & Munsterman, 2002) and it can be questioned whether such behaviors are easily trained and implemented. With respect to ethnic-minority parents, it can be hypothesized that cultural differences regarding educational beliefs and literacy practices influence the way these families implement FLPs. Educational beliefs and literacy practices are interrelated, and these have been found to vary across cultures (Anderson & Gunderson, 2003; Boyce et al., 2010). It might thus be that ethnic-minority parents' beliefs do not match program contents and approach and thus affect program implementation. Furthermore, home language, which is closely related to ethnicity, is likely to influence implementation quality. This is because most FLPs have been implemented in majority languages, which might have hampered parents with a different home language in optimally implementing these programs. However, a shortcoming in many intervention studies on FLPs so far is that they have given little attention to implementation quality (Manz et al., 2010; Van Steensel et al., 2011, 2012).

The Importance of Implementation Quality

Implementation quality is assumed to play an important role in the effectiveness of any intervention program (Durlak & DuPre, 2008; Durlak, 2010; Kallestad & Olweus, 2003; Sanetti & Kratochwill, 2009). In their landmark review, Durlak and DuPre (2008) analyzed over 500 studies on (mental) health prevention and promotion programs for children and adolescents, and found strong support for the importance of implementation quality in determining program effectiveness. Summarizing the outcomes of five meta-analyses, the authors concluded that good implementation generally results in effect sizes two to three times larger than when implementation is poor. They argue that failing to assess implementation quality prohibits valid conclusions regarding the value of the program, as: "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). The authors therefore conclude that "the

assessment of implementation is an absolute necessity in program evaluations. Evaluations that lack carefully collected information on implementation are flawed and incomplete." (Durlak & DuPre, 2008, p. 340).

It can be argued that examining implementation quality is of particular significance in the field of family literacy interventions (Bryant & Wasik, 2004; Powell & Carey, 2012; Raikes et al., 2006). Many FLPs have a phased design: trainers (e.g., teachers) are trained to deliver the program to parents, and parents are expected to transfer what they have learnt to their children. All phases need to be implemented as intended to be able to realize desired program effects. In order to analyze the implementation quality of FLPs, Powell and Carey (2012) proposed a framework encompassing three main variables: 'delivery', 'receipt', and 'enactment'. Each of these three variables contains a quality as well as a quantity dimension. Delivery refers to the transfer of main program contents from trainers to parents. The quantity dimension of delivery involves the dosage of parent training (e.g., number and duration of training sessions), whereas the quality dimension reflects the manner in which program contents are communicated to parents. Receipt is defined as the intensity and quality of parent engagement in training and program activities. Attendance at training sessions is an example of a measure of receipt quantity, whereas quality can be assessed by parents' use of targeted program strategies, understanding of program content, and their engagement during program activities with their child. Enactment pertains to the degree to which participants use the targeted behaviors and strategies outside of the intervention. Are parents able to transfer the learned program strategies to their day-to-day life? In the current dissertation we employed this framework to measure implementation quality of FLPs.

THIS DISSERTATION

In the four studies comprising this dissertation, we aim to shed more light on the role of implementation quality of FLPs. In the first study, we reviewed the literature on implementation quality of FLPs, to gain insight into how implementation has been assessed in studies so far, what previous studies reveal on (systematic differences in) the implementation of FLPs, and the extent to which implementation quality relates to intervention effects. In the second study, we measured and analyzed implementation quality and effects of a specific Dutch FLP called 'Early Education at Home' (EEH; Dutch Youth Institute, 2014). In light of the hypothesis posed in the literature regarding implementation quality of FLPs in low-SES families (Van Steensel et al., 2012), and our hypotheses regarding

implementation quality of FLPs in ethnic-minority and bilingual families, we additionally analyzed relations among these parent characteristics and program implementation. In the third and fourth study we took a more detailed look at parent-child interactions during literacy-related activities included in FLPs such as EEH: shared reading and so-called prompting board activities (see Appendix C.1 for an example of a prompting board). Observations of these activities can provide insight into how target group parents respond to different FLP activities and, more specifically, if certain activities are more suited to some groups than to others.

Implementation Quality of FLPs and its Relation to Program Effects (Chapter 2)

Given the importance of implementation quality in explaining intervention effectiveness (Durlak & DuPre, 2008), and the lack of attention for implementation that was observed in review studies and meta-analyses of FLP-effect studies (Manz et al., 2010; Van Steensel et al., 2011, 2012), we reviewed the literature on FLPs regarding implementation quality. We employed the framework proposed by Powell and Carey (2012; see "The Importance of Implementation Quality") with the purpose of examining what types of information were available about the implementation of FLPs and which conclusions could be drawn from this information. We analyzed 46 effect studies of FLPs that included information on program implementation, and made an inventory of whether and how quantity and quality of delivery, receipt, and enactment were measured. Furthermore, we analyzed results on the relationship between implementation quality and program effects on children's development. Our findings led to a number of recommendations for future research, which were then taken into account in an intervention study of a Dutch FLP (see Chapter 3).

Implementation and Effects of a Dutch FLP (Chapter 3)

On the basis of the framework introduced in Chapter 2, we conducted a program evaluation of the Dutch FLP 'VVE Thuis' or 'Early Education at Home' (EEH, Dutch Youth Institute, 2014), analyzing both its implementation quality and effects. EEH is a government-funded program conducted in major cities and suburban districts across The Netherlands, Belgium and Germany, and is used by about 8000 families a year (Kalthoff, personal communication). The program aims to increase literacy and language skills of children aged three to six years. Parents are provided with a range of materials that they can use to engage their child in literacy-related activities (e.g., storybooks, prompting boards, arts and crafts materials) and they are trained in realizing high quality parent-child interactions. This training focuses on interaction strategies such as parental scaffolding, sensitive responsiveness, and the use of

abstract language. EEH has a thematic structure and program themes overlap with those offered in preschools and kindergartens (e.g., 'Autumn', 'Art', 'Holidays'). Teachers are trained by program staff to deliver the intervention to parents. In turn, parents are trained by their child's teacher (sometimes together with a social worker) on how to implement program activities and interaction strategies. Training takes place during parent group meetings at (pre)school.

In the current study, we examined the version of EEH that aims at stimulating language and literacy development in kindergartners. The program also has a version for toddlers, which has been evaluated by Teepe (2018). To investigate program effects on child development, we measured children's emergent literacy, receptive vocabulary and language skills. Given the phased structure of program delivery (teachers are trained to deliver the program to parents, parents conduct the program with their children), we assumed it to be important to thoroughly examine all aspects of implementation quality, as it can be claimed that the chain is only as strong as its weakest link. Therefore, we measured both quantity and quality aspects of all three elements of implementation quality distinguished by Powell and Carey (2012): delivery, receipt, and enactment. For example, to measure quality of delivery, we observed parent training sessions at each participating school, thereby assessing adherence to program guidelines. The quality dimension of intervention receipt was measured by observing quality of parents' behaviors and language use during a program activity. Enactment quality was measured in a way similar to receipt quality, but instead of a program task we used a transfer task to assess parents' ability to transfer learned strategies to other (non-program) literacy-related activities. We tested relations among all quantity and quality aspects of implementation quality and intervention effects. Furthermore, we examined the relationships among SES, ethnic-minority status and home language, and EEH-implementation. This analysis was based on hypotheses posed in the literature regarding implementation quality of FLPs in low-SES families (Van Steensel et al., 2012), and our hypotheses regarding implementation of FLPs in ethnic-minority families and families in which parents have a home language other than the majority language (see 'Stimulating the HLE with Family Literacy Programs').

A Closer Look at Parent-Child Interactions During two Program Activities: Shared Reading and Prompting Boards (Chapters 4 and 5)

In the studies comprising the second part of this dissertation, we took a more detailed look at parent-child interactions during literacy-related activities included in EEH: shared reading and prompting board activities. A prompting board consists of a complex picture

around a certain theme, depicting a scenario, and is meant to elicit child speech (see Appendix C.1 for an example). Our comparison between shared reading and prompting board activities departs from the assumption that certain types of literacy-related activities lead to more stimulating parent-child interactions than others in terms of, for example, use of sophisticated vocabulary, abstract language, and conversation-eliciting utterances (Hoff-Ginsberg, 1991; Korat, 2009; Sorsby & Martlew, 1991; Vandermaas-Peeler, Nelson, Bumpass, & Sassine, 2009). More specifically, shared book reading has been found to be most effective in stimulating abstract interactions (verbatim reading of the storyline excluded), compared to activities such as toy play, play-doh modeling, and recounting a family outing (e.g., Crain-Thoreson, Dahlin, & Powell, 2001; Korat, 2009). Nevertheless, other activities focusing on symbolic content—such as prompting board activities—could elicit such interactions as well.

In addition to the activity at hand, another important determinant of stimulating interactions is parental SES. Research has demonstrated that low-SES parents' interaction patterns are different from those of high-SES parents, where the latter more often use abstract talk (Hoff, Laursen, Tardif, & Bornstein, 2002; Mol et al., 2008; Korat et al., 2008). Moreover, previous studies have reported that some activities reveal larger SES differences in abstract talk than others, implying an interaction effect of SES and activity type. In several studies, shared reading was found to be less prone to SES effects than non-scripted activities that focus on fine motor manipulation, such as play or mealtime conversations (Dunn, Wooding, & Hermann, 1977; Hoff-Ginsberg, 1991; Snow et al., 1976). For example, Snow et al. (1976) observed that during free play, academic and lower middle class mothers used more abstract speech than working class mothers, whereas these class differences did not occur during shared reading.

In the fourth and fifth chapter of this dissertation, we compared parent-child interactions during prompting boards and shared reading activities. Although prompting boards are widely used (in pre- and primary school curricula worldwide, on websites for stimulating home literacy activities, and in Family Literacy Programs such as EEH), little is known about parent-child interactions during these activities, and their effects on child outcomes. Chapter 4 reports on an exploratory study, conducted within a pilot study of the EEH program. We videotaped parent-child interactions during shared reading and prompting board activities, and transcribed the videos to code parent and child utterances for their level of abstraction (Sigel, 1970, 2002; Van Kleeck, 2008). Our comparison of prompting

boards and shared reading activities was based on the premise that both are very well suited for abstract discussions (as opposed to activities that focus on physical manipulation, such as toy play or arts and crafts), but, at the same time differ in their 'scriptedness.'

The study in Chapter 5 replicates the exploratory study using a larger sample, to further validate our findings, and to examine the moderating effect of SES, as well as relations among parents' abstract talk during both activities and children's language and literacy skills. It has been hypothesized that shared reading attenuates SES differences in abstract interactions due to the fact that parents are aided by the storyline to realize these interactions. Prompting boards, on the other hand, might prove especially challenging for low-SES parents, as they are non-scripted and depend more on parents' ability to make inferences. This is because while in books many connections between story components (i.e., between characters and/or actions) are made explicit in the narrative, such relationships remain implicit in prompting boards. Consequently, processing the contents of prompting boards requires describing these relationships, for which inferencing talk is needed (e.g., inferring a cause-and-effect relationship). In order to test our hypothesis that prompting boards are especially challenging for low-SES parents and children, we replicated the exploratory study in Chapter 4 using a larger sample of parent-child dyads. Additionally, we examined linkages between abstract interactions during these two activities and children's literacy and language skills. Results of this study are presented in Chapter 5.

Finally, in Chapter 6 we summarize the results of the four studies that were conducted in light of this dissertation. We return to the main issues raised pertaining to the relationship between implementation and effects of FLPs, as well as the relationships among relevant parent background variables (i.e., SES, ethnic-minority status, and home language) and implementation quality. Directions for future research are suggested and we conclude with practical implications for the field of family literacy interventions.

02

Implementation quality of Family Literacy Programs - A literature review

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ABSTRACT

Although accounting for implementation quality is important in any program evaluation, it can be argued that it is of particular significance to Family Literacy Programs. In previous meta-analyses it has been speculated that variability in implementation quality is partly responsible for the wide variability in program effects found. This review focuses on the implementation quality of Family Literacy Programs and its relationship with program effectiveness. Our search resulted in 46 studies. Information was coded in terms of 'delivery' (parent training), 'receipt' (parent engagement), and 'enactment' (transfer to daily life). We found substantial, but variable information on implementation quality: almost all studies provided information on receipt, but delivery and enactment were addressed much less. Overall, studies that did provide information showed frequent use of intervention-strategies, participation was high, and attrition was low. Parents increased their use of learned techniques and engaged in more literacy activities outside program time. However, we also found instances where implementation was less optimal. Moreover, critical notes can be made regarding methodological quality of the selected studies. Some of the measures used are not necessarily reliable indicators of implementation quality and results were at times presented with little precision. Our results have implications for researchers and practitioners.

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, Hecht, & Lonigan, 2002; Spira, Bracken, & Fischel, 2005). Variability in emergent literacy skills is dependent on differences in children's home literacy environments (HLE; Bradley et al., 2001; Scheele, Leseman, & Mayo, 2010), which refers to literacy-related activities that parents provide for young children, such as learning songs and poems, shared reading, and 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, Van IJzendoorn, & Pellegrini, 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 (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, Laursen, Tardif, & Bornstein 2002; Van Steensel, 2006).

Family Literacy Programs (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 programs, which is reflected in various typologies used by researchers to describe FLPs (Cairney, 2002; Nickse 1989, 1991; Sénéchal & Young, 2008). However, as this review builds on previous reviews and meta-analyses that focus on programs in which parents are trained to engage their children in literacy-related activities (Manz et al., 2010; Mol et al., 2008; Van Steensel, McElvany, Kurvers, & Herppich, 2011; Van Steensel, Herppich, McElvany, & Kurvers, 2012), we will focus on this type of programs, thereby excluding other types of programs (e.g., programs 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, program effects were positive and statistically significant. At the same time, however, there was considerable variability in effect sizes. This variability seemed partly due to differences in program 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 programs'—in which parents and children practice isolated literacy skills—were effective for children from at-risk families, programs focusing on shared reading showed small, sometimes even nonsignificant effects for these families. The authors suggest this raises doubts about whether at-risk families are capable of executing such shared-reading programs optimally (cf. Manz et al., 2010; Mol et al., 2008). 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, Fine, & Ziv, 2013). Previous research has shown that low-SES and ethnic minority parents are generally not as skilled in this respect as high-SES parents (Korat, Ron, & Klein, 2008; Mol et al., 2008; Sonnenschein & Munsterman, 2002). The observation of differential effects for low-SES groups stresses the importance of taking into account the way programs 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, Sheridan, Edwards, & Osborn, 2010), program 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 programs for children and adolescents, Durlak and DuPre, for example, found strong support for the importance of implementation quality in determining program effectiveness. They conclude that "the assessment of implementation is an absolute necessity in program 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 2.1 for a concise overview of the operationalization of these variables). Drawing from a well-known family literacy intervention, Dialogic Reading (Whitehurst, 1992), 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 storybook reading, whereby the child gradually becomes the storyteller and the parent assumes the role of listener.

TABLE 2.1 Implementation Quality Framework (following Powell & Carey, 2012)

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

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, 1992). Parents are trained during group meetings with other parents, in which the teacher (or another professional) explains the main program contents using various training techniques (delivery). Delivery of the program can then be quantified as the number of hours of parent training. The quality dimension of delivery refers to the manner in which program 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 program activities. Attendance at training sessions is an example of a measure of receipt quantity, whereas quality can be assessed by parents' use of targeted program strategies, understanding of program content, and their engagement during program 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 shared reading outside of program 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 center-based interventions, Blok et al. (2005) were able to include implementation quality as a moderator variable: they found that it was not related to program 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 program effects.

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

1. What information does current research provide about the implementation quality of FLPs, in terms of delivery, receipt, and enactment?
2. 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. A) Literacy: emergent literacy, family literacy, beginning reading, early reading, reading readiness, reading readiness tests, prereading experience, reading programs, reading ability, reading skills, phonological awareness, oral reading, reading aloud to others; B) Context: home visits, home, homes, family, family environment, family programs, 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; C) Intervention: early intervention, reading programs, family programs, home programs, nonschool educational programs, programs, program design, program development, program effectiveness, program evaluation, program implementation, program improvement, training, instructional effectiveness; D) 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 program. We define FLPs as programs 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; Van Steensel et al., 2011, Whitehurst & Lonigan, 1998);
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 summarized in the flow chart presented in Figure 2.1. 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 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, Escamilla, & Strickland, 2008; Manz et al., 2010; Mol et al., 2008; Piasta & Wagner, 2010; Sénéchal & Young, 2008, Van Steensel et al., 2011) and reference lists of the studies included so far. In total, we selected 46 individual studies.

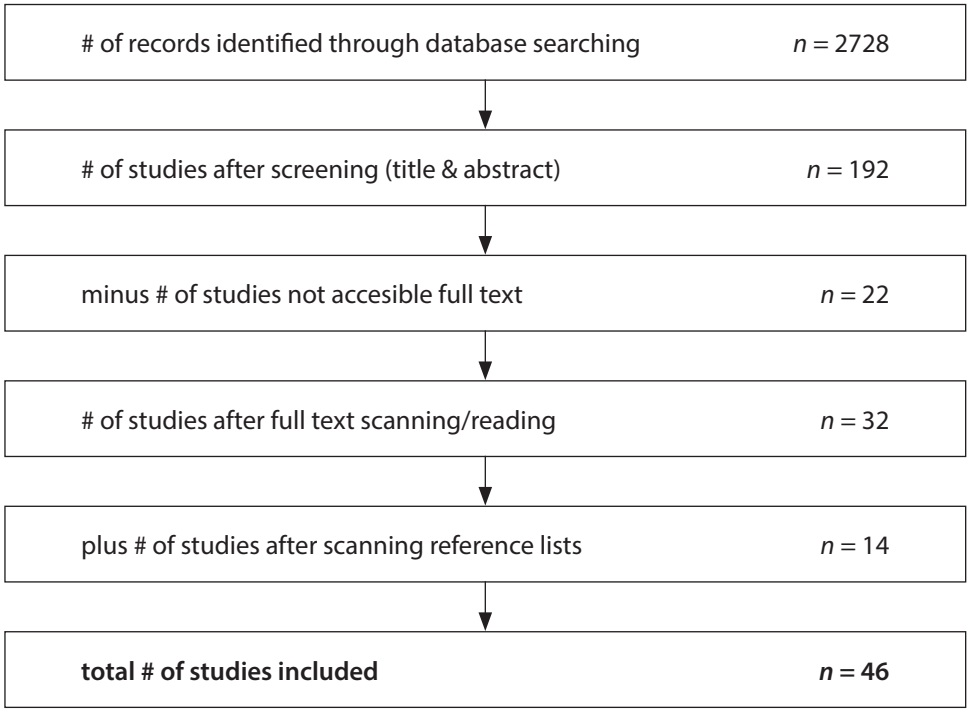

FIGURE 2.1. Flow chart of study selection process

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 Vandenbroucke et al. (2007). This scheme requires specifying bibliographical information, research questions, methods, results, conclusions, limitations, and generalizability. 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 program effects. Note that, in this review, we define program effects as child outcomes. Parent outcomes are incorporated in the concept of implementation quality, either as receipt or as enactment (see also Table 2.1).

Data Analysis

We took four steps in analyzing and presenting our selected body of studies. First, we categorized the various research designs that were employed, based on taxonomies common in the methodological literature (Cohen, Manion, & Morrison, 2007). Second, we made descriptions of the interventions that form the subject of the selected studies (see Appendix A.1), 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 program targeting and what were desired intervention effects? Third, we summarized 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 2.1). Finally, we identified studies focusing on the relationship between implementation quality and program effects (Research Question 2).

RESULTS

In Table 2.2, 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 program 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.

TABLE 2.2. Overview of Included Studies and Summary of Implementation Quality Outcomes

						Delivery	Receipt		Enactment		
No.	**First author**	**Year**	**Program**	**Design**	**N**	**Quality**	**Quality**	**Quantity**	**Quality**	**Quantity**	**RQ 2**
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	Kagitcibasi	2001	HIPPY	QE	280			+	+		
24	Knoche	2010	GR	QE	?	+	+				

25	Lam	2013	PR	E	195		+	?			
26	Landry	2012	PALS	E	264		+	+	+/-		+
27	Levin	2010	no name	E	124		+	+	+/-		
28	McElvany	2009	BPCRP	QE	32			+/-			
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-Harth	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		+	+/?		?	

Note. Abbreviations of the programs: PALS = Parents As Literacy Supporters; HS REDI = 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 posttest studies, no control group; SSMB = Single-subject multiple-baseline; SS = Single subject. Symbols indicating results: + = positive; +/- = mixed; - = negative; +(-) = mostly positive, some negative; ? = unclear/ undecided.

When this was not the case, we indicated results by a question mark (see Table 2.2). The quality and quantity dimensions of receipt both consist of multiple aspects and, therefore, the outcomes as shown in Table 2.2 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 program strategies (receipt quality aspect 1) and mixed results for program 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 posttests were administered. The second most applied research design was quasi-experimental (n = 15). These studies were mostly characterized by a comparison of experimental and control conditions as well as by pre- and posttests, but they differed from the first category in that no randomization was applied. The third category consists of experimental group only, pretest-posttest 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 to 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 program. 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 program contents from trainers to parents. The quality dimension of delivery reflects the manner in which program 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 analyzed, likely because the researcher was assumed to transfer the program as intended, and program 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 program delivery (only 3 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, Knoche, Kupzyk, Edwards, & Marvin, 2011) experimental teachers' behaviors 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 program 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 behavior, even though this was an explicit goal of the program. 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 program 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 realized 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: (a) parents' adherence to program instructions, (b) parents' self-reported understanding of the program, and (c) acceptability of the intervention. In 30 studies the quality of program receipt was measured (see Table 2.2), and in 23 of these studies, positive results were found. The quantity dimension involves (a) attrition, (b) attendance at training sessions (i.e., number of group meetings attended and/or home visits realized), and (c) number of program activities completed/hours of involvement in program 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 program 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 program strategy use in experimental versus control conditions, and in six of these studies a statistically significant difference in favor 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 between experimental and control conditions. However, the authors did report 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 program instructions in the vast majority of cases (Aram, Fine, & Ziv, 2013).

Understanding of program 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 program. In seven studies this aspect was measured by means of a standardized 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, Chafouleas, Lebel, & Blom-Hoffman, 2008, p. 982). Parents found the program instructions easy to implement, with only one exception: in the Words-to-Go program many parents expressed problems with program instructions (Reutzel, Fawson, & Smith, 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 programs 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 which was used at their children's schools. Almost all parents expressed that they would recommend the program 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 program activities because of time restrictions (6% of parents in a study by Hannon, Morgan, & Nutbrown (2006) experienced difficulties combining family and working life with program participation), and in a study by Morrison (2009), few difficulties were reported by parents in following session protocols.

Quantity

Attrition, that is, families untimely terminating program 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 program. 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, Nichols, & Rickelman, 2000; Hirst, Hannon, & Nutbrown, 2010; Rasinski & Stevenson, 2005; Tardáguila-Harth, 2007). In the other cases, attrition rates varied from 1% (Chow & McBride-Chang, 2003) to 60% (Wagner, Spiker, & Linn, 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 program 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, Leseman, & Rispens, 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 program 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, Spiker, & Linn, 2002) was studied in more detail in an exploratory follow-up study (Wagner, Spiker, Linn, & Hernandez, 2003). The authors found that 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 program/study (Fiala & Sheridan, 2003; Huebner, 2000; Justice, Weber, Ezell, & Bakeman, 2002; Resetar, Noell, & Pellegrin, 2006; Scott et al., 2010; Sundman-Wheat, 2012; Van Tuijl, Leseman, & Rispens, 2001). The most common reason parents reported was that they lacked time to participate in the program 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, Scott, Totsika, Ereky-Stevens, & Crook, 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 (Casey & Williamson, 2011; Faires, Nichols, & Rickelman, 2000; Rasinski & Stevenson, 2005). 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 Reutzel, Fawson, and Smith (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 nonattendance. 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 program corroborated their assumption: the authors report that the major reason the parents gave for nonattendance was shortage of time. A study by Hannon, Morgan, and Nutbrown (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 program 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 attending meetings was difficult because of work commitments (Hannonet al., 2006).

In only four of the 11 studies that included home visits in their training, the number of visits realized 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 two 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 & 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 realized 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 program 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 (Bierman et al., 2008; Blom-Hoffman, O'Neil-Pirozzi, Volpe, Cutting, & Bissinger, 2007; 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 program sessions or activities completed and/or the hours of involvement in program 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 & Leseman, 2004; Van Tuijl, 2002), for example, records kept

by trainers show that the program 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 program 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 seven 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 program sessions. Quality of enactment also pertains to intentions reported by parents to change their behavior as well as their reported behavioral 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 interactions. 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 program as compared to the beginning of the program. In two studies (Rasinski & Stevenson, 2005; Strouse, 2011) a transfer was reported from using learned strategies or procedures during program 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 storybooks 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 randomization. Mixed outcomes were found for Parents as Literacy Supporters (Landry et al., 2012). While some of the intended behaviors had increased at follow-up (i.e., children's behavioral responses), others had decreased slightly (i.e., mother's responsiveness). In a study by Levin and Aram (2010), analyses of videotapes showed that coaching parents affected the targeted activity only: parents did not generalize the learned principles of mediation (storybook reading mediation, writing mediation, and visuo-motor mediation) to other, noncoached, parent-child activities (i.e., shared reading, writing or visuo-motor activities outside program 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 interactions. Hebbeler and Gerlach-Downie (2002) presented less positive outcomes. Although parents were very positive about the Parents as Teachers-program, 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 program 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 program 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 program time and/or at the end of the intervention period compared to parents who did not participate (Morrison, 2009; Saint-Laurent & Giasson, 2005; 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 program 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 program. Another study by Hannon, Morgan, and Nutbrown (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 program.

Implementation Quality and Program Effects

The second question that guides this review involves the relationship between implementation quality and program effectiveness, which was analyzed 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 program effects.

In two studies (Barbre, 2003; Landry et al., 2012), indications for positive effects of implementation quality were found. Barbre (2003) analyzed the relationship between effects of the Bridge program and program completion, and found larger language gains for students who had completed more than a specific number of program 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 nonverbal behavior and engagement during a shared reading task to be partly explained by positive changes in parents' shared book reading behaviors (i.e., praise, encouragement, and 'language facilitation techniques', such as lead-ins and expansions) outside the program. Furthermore, if parents spent less time just reading the text, and focused more on such reading behaviors, 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 parents' 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 program 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 program, Van Tuijl, Leseman, and Rispens (2001) found no clear and consistent effects of attendance at group meetings, number of home visits realized, and number of activities completed on variability in child outcomes. According to the authors, a likely explanation for this finding is that most parents reached a 'ceiling' of implementation after which further variation in degree of implementation did not affect program efficacy.

The four remaining studies showed mixed results. In a study by Jordan, Snow, and Porche (2000) on Eearly Access to Succes in Education, a positive effect was found of the rate of completion of intervention activities: every completed activity was associated with about a 5-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, Snow, & Porche, 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 analyzed. Regression results showed that frequency of attending program 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, Spiker, and Linn (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 program evaluation (Durlak & DuPre, 2008), it can be argued that it is of particular significance to Family Literacy Programs. 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 program 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 others 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, organizational, and interpersonal skills for interventionists to take this role (Wagner, Spiker, & Gerlach-Downie, 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 to control conditions. However, we also found that trainers do not necessarily use intervention strategies as intended. Some trainers felt reluctant to endorse certain program 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 recognize 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 program contents to parents fails, they can hardly be expected to take in and carry out the program 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 program activities was reported on considerably less than quantitative variables such as activities completed or hours of involvement, although previous reviews and meta-analyses (Manz et al., 2010; Mol et al., 2008; Van Steensel et al., 2012) have suggested the former is a key variable in program success: lack of program effects is partly attributed to parents not being able to apply the strategies originally intended by the program developers. This difference in focus could be explained by the amount of effort required to measure both dimensions of receipt. Examining parental adherence to program 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 program contents are transferred from parents to children seems crucial for understanding variability in program 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 behaviors during program activities within the intervention period and higher frequencies of targeted behaviors in experimental versus 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 programs very valuable and useful. To what extent such observations are generalizable 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 program sessions/activities completed and/or the hours of involvement in program 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 program 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 program time). This seems partly induced by the variability in program scopes. Studies focusing on quantity of enactment mostly involved programs 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 (Bus et al., 1995; Desforges & Abouchaar, 2003; Hammett, Van Kleeck, & Huberty, 2003; Leseman & De Jong, 1998; Scarborough & Dobrich, 1994; Sylva et al., 2004), it seems important to include either dimension when examining program enactment. Moreover, it can be assumed that program effects on child outcomes are mediated by the extent to which they bring about change in parental behaviors 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 program 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 program 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 behaviors 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 analyzing the long-term effects of FLPs on child outcomes: they can help in explaining why program 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 program time.

Regarding our second research question on the relationship between program implementation quality and program effects we found that a limited number of studies—one fifth of those included—analyzed this relationship. Thus, even though implementation has been shown to be a major factor in program effects across a range of fields (Dulak & DuPre, 2008) and several authors suggest that this topic is particularly relevant in the field of family literacy (Bryant & Wasik, 2004; Powell & Carey, 2012; Van Steensel et al., 2011), the relationship between implementation and effects is largely neglected. The outcomes of the studies that did analyze 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 characterized 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 program success.

Implications for Research

As we have argued, it is important for researchers of FLPs to provide more insight in program 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 program 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 program 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 program 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 program 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 behavior (i.e., video-/audio-observations) in addition to self-reports. This will aid in providing more valid indications of parent, child, and trainer behaviors during training sessions and program activities, which will also likely lead to more reliable analyses of implementation and program 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 among delivery, receipt, and enactment (see our first recommendation), but would also enable researchers to determine the relative weight these different components have in explaining program 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 children's literacy in general. Hence, it seems important to measure retention of enactment results in the long run.

Fifth, other researchers (Manz et al., 2010; Mol et al., 2008; Van Steensel et al., 2012) hypothesized 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 observed less prominent in low-SES parents compared to high-SES parents (Korat, Ron, & Klein, 2008; Mol et al., 2008; Sonnenschein & Munsterman, 2002). However, only few of the included studies offer insight into this issue. In six studies the relationship between parental SES and program receipt was analyzed. 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 program 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 and FLPs can aid in bridging this gap (Sénéchal & Young, 2008; Van Steensel et al., 2011). However, for both 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 scrutinizing the relationship between implementation quality and program effects remains a challenge for future family literacy research.

03

Implementation quality and effects of a Dutch Family Literacy Program

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ABSTRACT

Family Literacy Programs aim to promote at-risk children's literacy development by stimulating their home literacy environments. In this study, implementation quality and effects of a Dutch program were examined in a sample of parents and their children (N = 207, M_{age} at pre-test: 64 months) during the school year of 2014-2015. Program effects on children's development were expected to be mediated by the home literacy environment and parent self-efficacy. Results indicated no main intervention effects on children's literacy development, and no mediation effects by the home literacy environment and parent self-efficacy. Implementation quality was higher for high-SES, and native Dutch parents than for low-SES and ethnic-minority parents, however, implementation quality did not predict children's literacy development. Possible explanations and implications for research and practice are discussed.

INTRODUCTION

Literacy is a key factor in children's educational success and in their development of a broad range of skills (Carpentieri, Fairfax-Cholmeley, Litster, & Vorhaus, 2011). Differences in literacy abilities appear at an early age (Lonigan, Burgess, & Anthony, 2000; Sénéchal & LeFevre, 2014) and these early differences are predictive of children's later reading and writing development (Scarborough, 2009). When exploring factors influencing early literacy, research suggests that variables within the home environment may be of greater influence than those within the school context (Lonigan & Whitehurst, 1998; Carter, Chard, & Pool, 2009; Joyner, 2014). Children who grow up in rich home literacy environments (HLEs) have important advantages over children whose parents rarely engage them in literacy-related activities (Bradley, Corwyn, McAdoo, & García Coll, 2001; Scheele, Leseman, & Mayo, 2010).

Recognizing the strong influence of parents as first educators of their children (Britto, Brooks-Gunn, & Griffin, 2006), Family Literacy Programs (FLPs) aim to promote children' s literacy development by stimulating their HLEs, particularly in at-risk families. Hannon (2003) defines FLPs as "programmes to teach literacy that acknowledge and make use of learner's family relationships and engagement in family literacy practices" (p. 100). Although this definition encompasses different sorts of programs (e.g., Cairney, 2002; Nickse 1989, 1991), these programs generally encourage parents to engage in joint literacy activities with their child. These activities can take different forms. Sénéchal and LeFevre (2002, 2014), for instance, distinguish formal and informal activities. In formal literacy activities parents and children direct their full attention to print (e.g., teaching letters, practicing name writing), whereas in informal literacy activities, the focus is on constructing meaning from text (e.g., shared book reading). A focus on formal activities is related to a so-called 'skills-oriented' perspective on emergent literacy, while a focus on meaning is associated with a 'constructivist', 'holistic' or 'whole language' approach (Lynch, Anderson, Anderson, & Shapiro, 2006; Neuman, Celano, & Fischer, 1996). In a skills-oriented perspective, literacy is seen as a set of isolated skills (e.g., letter knowledge) that can be trained. In contrast, in a constructivist approach, language is viewed as an integrated system and becoming literate is believed to occur through social interaction within a meaningful context (Lynch et al., 2006).

Over the past decades, various FLPs have been developed that are based on either of the two perspectives and many have been the subject of effect studies. These effect studies were summarized in a number of meta-analyses. Sénéchal and Young (2008), first of all, compared the effects of shared reading programs, that take a more constructivist approach to literacy learning, and programs in which parents tutor specific skills, in accordance

with a formal perspective. They found tutoring programs to yield large effects on reading acquisition, whereas shared reading programs yielded trivial effects (although the latter observation was based on only three studies). A second meta-analysis was conducted by Manz, Hughes, Barnabas, Bracaliello, and Ginsburg-Block (2010). Focusing mostly on shared reading programs, the authors found an overall small effect on children's literacy outcomes. When zooming in on specific subcategories of skills, the picture was more diverse, however: Manz et al. (2010) established, on average, a medium to large effect on phonological awareness, a moderate effect on expressive skills (mostly expressive vocabulary), and small effects on general reading (early reading ability and print recognition), concepts of print, and receptive skills. Mol, Bus, de Jong, and Smeets (2008) summarized the effects of Dialogic Reading programs on vocabulary development, examining the added value of this approach—which requires the child's active participation—above and beyond typical shared reading. They found a medium mean effect (Cohen's $d = .59$) in favor of Dialogic Reading. In their meta-analysis, Van Steensel, McElvany, Kurvers, and Herppich (2011) found small effects of FLPs, both for programs following an informal and formal perspective. Similar to Sénéchal and Young (2008), they found no effects of programs that exclusively included shared reading. In summary, meta-analyses show that FLPs are generally effective, but there is variability in effect sizes. This variability partly depends on program features and types of outcome measures.

Another source of variability is the target population. Two of the afore-mentioned meta-analyses provided evidence for differential effects of shared reading programs for different subgroups of children. Mol et al. (2008) found that for children who were at risk of language and literacy impairments (based on family income or maternal education), the effects of Dialogic Reading on vocabulary skills were trivial as compared to the effects for non-at risk children ($d = 0.13$ vs. $d = 0.53$). Manz et al. (2010) reported a significant difference in effect sizes between Caucasian and ethnic-minority families ($d = 0.64$ versus $d = 0.16$), as well as in effect sizes between middle- or high-income and low-income families ($d = 0.39$ versus $d = 0.14$). In an overview of different meta-analyses, Van Steensel, Herppich, McElvany, and Kurvers (2012) suggest this raises doubts about whether low-SES families are capable of executing FLPs optimally. This might be particularly true for programs taking a constructivist approach as opposed to more skills-oriented programs, as the former are more open and less pre-structured than the latter, placing more demands on parental skills. Many shared reading programs, for instance, target parental strategies such as scaffolding, which require parents to be sensitive and responsive to their children's input (Aram, Fine, & Ziv, 2013; Van Steensel et al., 2012). Previous research has shown that low-SES parents demonstrate less

of this behavior compared to high-SES parents (Hoff, Laursen, & Tardif, 2002; Korat, Ron, & Klein, 2008; Van IJzendoorn, 1990). Therefore, it is possible that low-SES parents are not able to optimally use the strategies promoted by these programs.

The effect of ethnic-minority status can be explained in three ways. First of all, its effect is likely to be partly confounded with the effect of SES, as ethnic-minority families more often have lower educational levels and incomes. Additionally, the effect of ethnic-minority status can reflect cultural differences in educational beliefs. Educational beliefs and literacy practices are interrelated, and these have been found to vary across cultures (Anderson & Gunderson, 2003; Boyce, Innocenti, Roggman, Jump Norman, & Ortiz, 2010). It might thus be that minority parents' beliefs do not match program contents and approach and thus affect program implementation. Finally, the effect of ethnic-minority status can reflect the effect of language proficiency. Often, FLPs are implemented in the majority language, which might hamper parents with a different home language in optimally implementing these programs. However, a shortcoming in many intervention studies on FLPs so far is that they have given little attention to implementation quality (Manz et al., 2010; Van Steensel et al., 2011, 2012).

The Importance of Implementation Quality

Implementation quality is assumed to play an important role in the effectiveness of any intervention program (Durlak & DuPre, 2008; Durlak, 2010; Kallestad & Olweus, 2003; Sanetti & Kratochwill, 2009). In their landmark review, Durlak and DuPre (2008) analyzed over 500 studies on (mental) health prevention and promotion programs for children and adolescents, and found strong support for the importance of implementation quality in determining program effectiveness. Summarizing the outcomes of five meta-analyses, the authors concluded that good implementation generally results in effect sizes two to three times larger than when implementation is poor. They therefore state that "the assessment of implementation is an absolute necessity in program evaluations. Evaluations that lack carefully collected information on implementation are flawed and incomplete" (Durlak & DuPre, 2008, p. 340). It can be argued that examining implementation quality is of particular significance in the field of family literacy interventions (Bryant & Wasik, 2004; Powell & Carey, 2012; Raikes et al., 2006). Many FLPs have a phased design: trainers (e.g., teachers, social workers) are trained to deliver the program to parents, and parents are expected to transfer what they have learnt to their children. All of these phases need to be implemented as intended to be able to realize desired program effects. Furthermore, as

argued previously, findings of differential effects suggest that implementation quality is of particular importance in the case of programs taking a more constructivist approach (such as shared reading programs), focusing on low-SES and ethnic-minority populations.

In the current study, we build on a framework proposed by Powell and Carey (2012) to systematically analyze the implementation quality of FLPs. Given the assumption that limited program effects for children of low-SES and ethnic-minority families are a result of the way parents take in and carry out program activities, we focus particularly on the two components in this framework that involve parental implementation, namely 'receipt' and 'enactment'. Each of these components contains both a quality and a quantity dimension. Receipt is defined as the intensity and quality of parent engagement in training and program activities. Attendance at training sessions is an example of a measure of receipt quantity, whereas quality can be assessed by parents' use of targeted program strategies, understanding of program content, and their engagement during program activities with their child. Enactment pertains to the degree to which participants use the gained knowledge and skills in their day-to-day life. Are parents able to transfer the learned program strategies to activities outside of the intervention? For sustained program effects, it is important that parents are able to maintain their use of newly learned skills in order to reach more long term goals such as improving children's literacy skills. The third component of Powell and Carey's framework is 'delivery', which refers to the transfer of main program contents from trainers to parents. The quantity dimension of delivery involves the dosage of parent training (e.g., number and duration of training sessions), whereas the quality dimension reflects the manner in which program contents are communicated to parents.

Recently, De la Rie, Van Steensel, and Van Gelderen (2016) reviewed the available research on implementation quality of FLPs and its relation to child outcomes. The authors analyzed 46 studies and found that information on implementation varied in breadth and quality: almost all studies provided information on parents' quantitative engagement in programs (i.e., receipt quantity), but fewer studies reported about characteristics of parent training (i.e., delivery), quality of engagement (i.e., receipt quality), and transfer to daily life (i.e., enactment). The relationships between implementation quality and FLP effects remained largely unexplored. Moreover, studies that did analyze this relationship reported inconsistent findings. For example, Landry et al. (2012) studied the effects of Parents as Literacy Supporters (PALS) and found that positive changes in parents' shared book reading behaviors (i.e., praise, encouragement, lead-ins and expansions) partly explained program effects. These effects were established on children's verbal and nonverbal behavior and engagement during a shared reading task. Lam, Chow-Yeung, Wong, Lau, and Tse (2013) found effects

of a Paired Reading intervention to be mediated by positive changes in parents' sense of efficacy in helping their children learn. In contrast, Burchinal, Campbell, Brayant, Wasik, and Ramey (1997) did not find intervention effects to be mediated by enactment. The authors tested whether changes in parental attitudes (regarding authoritarian caregiving) and the HLE mediated the effects of a home visiting intervention for African American children from low-income families on their cognitive development. The intervention did not enhance cognitive performance, nor did it succeed in changing parental attitudes or the HLE. With respect to program receipt, Jordan, Snow, and Porche (2000) studied Early Access to Success in Education, and found a positive effect of the rate of completion of intervention activities: every completed activity was associated with about a 5-point increase in children's predicted language gains, as measured by the Comprehensive Assessment Program (CAP) language test. The authors also found attendance at training sessions to be weakly but 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). 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. In a study on a Dutch FLP, Van Tuijl, Leseman, and Rispens (2001) found no clear and consistent effects of attendance at group meetings, number of home visits realized, and number of activities completed on variability in child outcomes. According to the authors, an explanation for this finding is that most parents reached an implementation 'ceiling', after which further variation in degree of implementation did not affect program efficacy. In conclusion, intervention studies examining the relationships between receipt, enactment, and effects reported inconsistent findings. Moreover, there are no studies examining quality and quantity dimensions of both receipt and enactment, as well as relationships between implementation variables and program effects.

The Current Study

In the current study, we aim to contribute to the literature by examining both quality and quantity dimensions of receipt and enactment, and relationships with program effects. We do so in the context of a Dutch FLP called 'Early Education at Home' (EEH; Dutch Youth Institute, 2014). EEH is a government-funded program conducted in major cities and suburban districts across The Netherlands, Belgium and Germany. EEH is mostly conducted in schools with many children from low-educated and/or ethnic minority families, although—because the program often targets whole classes—also higher-educated, native Dutch families take part. The program departs from a constructivist approach: it involves informal literacy activities, such as shared reading, prompting board activities, and arts and crafts

activities. Parents are trained by their child's teacher during group meetings at school in which literacy activities are discussed, modeled and role-played. EEH is assumed to affect children's literacy outcomes by means of improving both the frequency and the quality of literacy related-activities in the home. In addition, parent training is assumed to increase parents' self-efficacy. By enabling parents to create successful learning experiences with their child, they are expected to gain confidence in their role.

The main goal of this quasi-experimental study is to examine program effects and the role that receipt and enactment play in explaining effects. Given the nature of the two variables, receipt and enactment take on different roles in our design. Because we expect that variability in the quantity and quality of parent engagement in the program (Pelletier & Corter, 2005) is associated with children's development during program participation, we include receipt variables as predictors of experimental children's growth in language and literacy skills (e.g., Jordan et al., 2000). Enactment is expected to serve as a mediator of intervention effects, as in most FLPs child outcomes are expected to be realized by improving parent skills, that is, FLP participation affects parent skills which, in turn, affect child outcomes. As such, our enactment variables are treated as mediators of intervention effects (e.g., Lam et al., 2013; Landry et al., 2012).

In light of the hypothesis posed in the literature regarding implementation quality of FLPs in low-SES families (Van Steensel et al., 2012), and our hypotheses regarding implementation quality of FLPs in ethnic-minority families and families in which parents have a home language other than the majority language (in which the FLP is offered), we additionally analyzed relations among these parent background characteristics and program implementation.

Although the study focuses on receipt and enactment, we additionally measured program delivery, the third element proposed by Powell and Carey (2012). However, given the scope of the current study, this variable was not included in our analyses. As such, program delivery is described in the methods section (see "Fidelity of delivery").

Research Questions

The following research questions are addressed:

1. Does EEH positively affect children's language and literacy skills?
2. Do enactment variables (HLE, parents' sense of self-efficacy, and the quality of parents' behavior and language) mediate the effects of the EEH intervention on growth in children's language and literacy skills?

3. Do receipt variables (quantity and quality of parental engagement in the intervention) influence children's growth in language and literacy skills?
4. What are the relationships among parental SES, ethnic-minority status, and home language, and implementation quality of EEH?

METHOD

Sample

Primary schools in the Western part of The Netherlands were invited to participate by letters and subsequent telephone calls, as well as by posting a call in a digital community for kindergarten teachers. Schools that responded positively were invited to participate if two second year kindergarten classes and their teachers were available, to allow selecting both an experimental and a control class from the same school, to minimize school effects. Control classes followed the same kindergarten curriculum as the experimental classes, and they were not working with an FLP. Seven Dutch primary schools volunteered to participate in the study. Since not all teachers were willing to take part in a randomization procedure, teachers decided which class was assigned to the experimental and control conditions. All participating classes were second year kindergarten classes, with pupils aged between 4 and 6 years old. In six of the schools, two classes took part, whereas one larger school participated with six classes (three experimental and three control classes). The study involved a total of seven kindergarten teachers who delivered the intervention to the parents of their pupils. None of the teachers had prior experience working with EEH.

All parents were informed about the study by the school through a letter and they could indicate if they did not wish to participate. None of the parents refused participation. All children in the selected classes participated in the study, with three exceptions: two children who had a twin in the other condition (to prevent bias from a control group child being exposed to the intervention), and one child with Down's syndrome. In total, parents of 217 children from 18 classes agreed to participate in the study: 119 children participated in the intervention (nine classes) and 98 were in the control condition (nine classes). Children had a mean age of 64 months at pre-test (range: 57-76 months) and half the sample consisted of girls.

We checked for significant differences between the experimental and control conditions on children's pre-test language and literacy scores, using ANOVA: none were found. Regarding relevant background characteristics of children (gender, age) and parents (SES,

migration background, home language), and richness of the HLE and parent self-efficacy (PSE), we again found no significant differences between the experimental and control group participants at pre-test, suggesting that the two conditions were comparable on important characteristics.

We asked the parents who considered themselves to be most involved in the child's upbringing to fill in a parent questionnaire (79% mothers, 20% fathers, 1% foster parents or extended family members). Questionnaires were available in Dutch, English, Arabic, Turkish and Polish. All but three parents completed this questionnaire. For parent-child observations, we asked parents who were most involved in conducting EEH with the child (experimental group) or in the upbringing of the child (control group) to participate. Parents' characteristics are presented in Table 3.1.

TABLE 3.1. Parent Characteristics

	% of total sample
Education	
No education	2,4
Primary school	1,9
Secondary education (12-15 years of age)	3,8
Secondary education (15-18 years of age)	15,6
Senior secondary vocational education	36
College/university degree	40,3[a]
Ethnic-minority status	39
Home language	
More proficient in Dutch	62
Equally proficient in Dutch and other language	25
More proficient in other language	13

Note. [a] although EEH is in principle meant for children from low-SES families, the sample is heterogeneous. This reflects the program's whole-class approach, as mentioned previously.

During the school year ten pupils left the study as a result of their families moving out of the area, or switching schools for another reason (e.g., because the child was in need of special education), decreasing the sample size to a total of 207 participants at the end of the school year (115 experimental participants; 92 controls). Although there was 4,6% attrition from the original sample, bivariate correlations revealed no significant differences between

drop-outs and the remainder of our sample on key background characteristics (i.e., parental educational attainment and migration background, gender of the child). There was one exception: home language was significantly related to drop-out ($r = .202$, $p < .01$), indicating that native Dutch speaking parents remained in the sample more often compared to non-native Dutch speakers.

Measures

Language and literacy skills

Three measures were included to assess child language and emergent literacy skills. First, we used a standardized language test (Cito, 2011) that was part of the participating schools' student monitoring system and that was administered (pre- and post-test) by teachers in a regular class setting (approx. 30 mins.). This test measured children's language abilities, that is, receptive vocabulary, critical listening, phonemic and rhyme awareness, print knowledge, and auditory synthesis abilities. Cronbach's alpha for the total score is .87 (Lansink & Hemker, 2010).

Information on children's emergent literacy skills was obtained by teacher ratings via a questionnaire. We used an emergent literacy scale based on Van Steensel (2006), which consists of three subscales with a total of 15 items: oral language, phonological awareness, and print knowledge. For our data, the composite alpha was .97 (averaged across pre- and post-test).

Additional information on children's curriculum-based vocabulary was obtained from a receptive vocabulary test (similar in format to the Peabody Picture Vocabulary Test) designed for this study by the first and third author. We incorporated 43 words from EEH program themes. Children were individually tested (approx. 5 mins.) by a research assistant, in a quiet one-on-one setting. Cronbach's alpha for this test was .71 (averaged across pre- and post-test).

Implementation quality

For an overview of our measurements of implementation quality following the conceptual framework of Powell and Carey (2012), see Table 3.2. Regarding receipt quantity, attendance at group meetings was registered for each session by program deliverers. Additionally, parents were given diaries for every activity booklet, in which they were instructed to register completed program activities. All other implementation measures were administered twice: at the beginning and at the end of the intervention period (see Figure 3.1).

TABLE 3.2. Receipt and Enactment (based on Powell & Carey, 2012)

Element of Implementation	Dimension	Aspect
Receipt	Quantity	Attendance at training sessions
		Number of diaries handed in, activities completed
	Quality	Quality of parent behavior and language during a program activity (PA; shared reading)
Enactment	Quantity	Frequency of literacy-related activities outside program time (HLE)
	Quality	Quality of parent behavior and language during a non-program activity (NPA; prompting board)
		Parent self-efficacy in helping the child succeed in school (PSE)

FIGURE 3.1. Study overview – Intervention and Measurements

	T1	T2	T3	T4
	Jun-aug 2014	Sep-Oct 2014	Jan 2015	Jun 2015
EEH	• Teacher training	start EEH • Teacher coaching		end EEH
Child outcomes	• Language test (Cito, 2011)	• Emergent literacy scale (Van Steensel, 2006) • Receptive vocabulary test	• Language test	• Language test • Emergent literacy scale • Receptive vocabulary test
Parent questionnaire		**Enactment** • HLE (Van Steensel, 2006) • Parent self-efficacy (Hoover-Dempsey, 2005)		**Enactment** • HLE • Parent self-efficacy
Parent-child observations		**Receipt & enactment** • Quality of parent behavior and language during a NPA and a PA (Kenney, 2012)		**Receipt & enactment** • Quality of parent behavior and language during a NPA and a PA

We counted the number of diaries handed in by parents and we counted the number of activities completed, based on what parents reported in the diaries. The quality dimension of intervention receipt was measured by observing parent-child interactions during a program activity (PA: shared reading) at pre- and post-test, and scoring the quality of parents' behaviors and language.

Enactment quantity was measured by a HLE-questionnaire consisting of eight items derived from work by Van Steensel (2006). Parents were asked to indicate how many times they engaged in literacy-related activities with their child on a scale ranging from 1 (*daily*) to 4 (*almost never/never*). The following activities were included: shared reading, going to the library, singing songs, writing alphabet letters, storytelling, visiting a book store, playing educational (online) games, and watching educational TV shows together. The Cronbach's alpha coefficient for this scale was .63.

Enactment quality was measured by scoring the quality of parents' behaviors and language during a non-program activity (NPA), which was a prompting board task very much like those in EEH, but without written (program) instructions. A prompting board is a complex picture, suggesting a sequence of events, and is designed to elicit child speech. We selected a picture of a busy park on a summer day (pre-test) and a picture of a zoo (post-test) from an existing prompting board book (a Wimmelbuch by Anne Suess; for a description of prompting board books see Rémi, 2011). We invited parents to engage in a conversation with their child as they would normally do when looking at pictures together.

In order to rate the observations of both the program and non-program activities we used an observation scheme developed by Kenney (2012; later used by Mol & Neuman, 2014), which we translated from English to Dutch. This observation scheme entails the following six categories of parent behavior features and language: labeling, generalizing, repetition and paraphrasing, scaffolding, fostering child autonomy, and quantity and variety of language (see Appendix B.1 for examples). Labeling refers to parents' use of labels, describing and defining objects, characters and situations that occur on the prompting board or in the story. Generalizing pertains to the degree to which parents encourage their child to make connections from the observable to the non-observable, and use hypothetical thinking. The third category refers to the use of repetition and paraphrasing to highlight instructions or main ideas. Scaffolding entails parents' attempts to intentionally foster their child's development. Fostering child autonomy refers to parents' responsiveness to their child's cues in an appropriate and timely manner. Lastly, quantity and variety of language entails length of utterances, richness of vocabulary used, and syntactic complexity (Kenney, 2012). These are all aspects targeted in EEH and were scored on a scale ranging from 1 (*not at all characteristic*) to 4 (*very characteristic*). Cronbach's alpha reliabilities of the scales were .83 for the NPA and .87 for the PA.

Because of the large number of observations (n = 156 at pre-test and n = 148 at post-test for non-program and program activities combined), ratings were given by 12 coders. In order

to assess interobserver agreement Cronbach's alpha's were calculated for the NPA and the PA on both the pre- and post-test, based on a random selection of 12% of all ratings. This selection of observations was double-coded by the first author. The average alpha's across the observed categories of parent behavior and language for the NPA (= .86) and the PA (= .87) at pre-test indicated sufficient agreement. At post-test, agreement among raters as indicated by Cronbach's alpha was .78 on average for the NPA and .83 on average for the PA. As our sample contained parents with limited Dutch language proficiency, observations were conducted in parents' self-reported home language, with the aid of bilingual research assistants who spoke one or more of the following languages: Arabic, Berber, English, Polish, and Turkish.

To measure parental self-efficacy (PSE) as an aspect of enactment, we administered the "How to help my child succeed in school scale" at pre- and post-test. This scale was developed by Hoover-Dempsey, Bassler, and Brissie (1992) and consists of 12 items which measure parents' perceptions of personal efficacy, specifically in relation to supporting their children's school success. This scale contains items such as "I know how to help my child do well in school" and "If I try hard, I can get through to my child even when he or she has trouble understanding something." Parents were asked to rate their sense of efficacy per item on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach's alpha for this scale was .76.

Parent and child background variables

To obtain relevant background information from parents and answer our fourth research question, we added questions to our parent questionnaire pertaining to SES, ethnic-minority status, and home language. SES was operationalized as the highest level of education that parents had completed. Ethnic-minority status was distilled from parents' country of birth. Home language was operationalized as parents' best oral language (see Participants). Furthermore, we asked teachers to provide us with information regarding children's age and gender.

Procedure

Figure 3.1 provides information on the overall planning of the study. Experimental teachers were trained and coached four times from June to October 2014. Measurements took place at four points in time. The pre-tests were spread across two periods: the language test was administered in June 2014 (T1), since this is the administration time prescribed (Cito, 2011),

whereas the other measures were administered in September and October 2014 (T2), closer to the start of the intervention period (September 2014). Subsequently, data were collected half-way through the school year (T3: January 2015), and at post-test (T4: June 2015).

Intervention

The EEH intervention aims at engaging parents from lower socio-economic and migration backgrounds in their children's early literacy development by encouraging them to conduct a variety of informal literacy activities. Additionally, EEH is based on the idea that positive effects on literacy development can be expected when experiences in the home and school are mutually supportive (Sheridan, Knoche, Edwards, Bovaird, & Kupzyk, 2010). Therefore, EEH provides thematic activity booklets that align with the themes covered in kindergarten curricula. About every six weeks, a booklet for the new theme with related activities is handed out and explained to parents during a group meeting at school.

Materials

Participants in EEH are provided with a colorful bag holding a multi-ordner with activity booklets (one for each theme, with a total of seven themes per year) which include eight literacy-related activities and instructions, as well as materials for conducting these activities, such as storybooks, prompting boards, and materials for arts and crafts (e.g., colored paper, crayons, paint, scissors, etc.). Each activity comes with a sheet of instructions for parental guidance and suggestions for questions aimed to trigger stimulating parent-child interactions, characterized by responsiveness, open-ended questions, abstract language use, scaffolding, and exposure to new vocabulary. As a considerable part of the target group of EEH consists of children of ethnic-minority parents who are more proficient in other languages than Dutch, some materials (i.e., storybooks) are also available in a selection of other languages (i.e., Arabic, English, and Turkish).

Parent meetings (delivery)

Parents in the intervention group were trained by their child's teacher. Teachers were requested to organize seven six-weekly group meetings, lasting between 60 and 90 minutes each. Teachers worked from a scripted outline to ensure fidelity across schools. The first part of a standard EEH parent meeting is dedicated to informing parents about what children have been learning in class during the previous period, and what they will be learning during the upcoming period. During the second part of the meeting, teachers were asked to evaluate the activities that parents completed with their child over the preceding period,

in order to identify difficulties and suggestions for improvement for upcoming program themes. In the final stage, teachers were requested to provide parents with an overview of the activities in the new workbook and to explain how to conduct these activities.

Experimental teacher training

Teachers who delivered the program to parents were trained by the first author in two phases. Phase 1 entailed a three-hour session in which teachers were instructed on the specific contents of EEH, and on delivering the program to parents. Teachers were trained in using four techniques: explaining activities to parents in an interactive manner, modeling interaction strategies, conducting activities together with all attending parents, and role-play (i.e., enacting activities with a colleague and/or parent(s), where one plays the parent and another the child). They were trained to invite parents to actively share experiences with the program. Finally, trainers were asked to provide parents with ideas for them to transfer skills mastered during the intervention period to their daily lives (enactment). This included, for example, suggestions for turning a regular daily activity, such as shopping, into a learning experience. Parents could be encouraged to discuss pieces of clothing with their child, and to ask open-ended questions, such as "What pieces of clothing are suitable for winters?".

Additionally, teachers were stimulated to adapt their instructions to low-educated and low-literate parents, and parents with limited Dutch language proficiency, through the use of pictures, repetition, monitoring parents' understanding, and, when possible, allowing time for parents to translate for others. EEH assumes that parents are best able to support their children's development by using the language they are most proficient in, and that knowledge and skills acquired in the first language can be transferred to the second language (Cummins, 1991). Hence, teachers were encouraged to stimulate parents with limited Dutch proficiency to make use of the materials available in other languages and conduct activities in their home language.

After this first training session, the intervention commenced. Phase 2 of the teacher training consisted of coaching. After the second and the third parent meeting, which were observed by the first author, teachers were provided with immediate feedback regarding their performance based on these observations (1.5 hrs per session).

Fidelity of delivery

Adherence to the proposed number and duration of group meetings was checked by contacting experimental group teachers after each planned meeting, asking them to

briefly evaluate the meeting via email (delivery quantity). Almost all teachers were able to organize all intended seven training sessions. One teacher organized six sessions. The average duration of group meetings across all schools was 52 minutes, with quite a large range (15-80 minutes). Based on the average duration of all three observed sessions, only three schools stayed within the range that is prescribed by the program (60-90 minutes).

In order to assess the quality of intervention delivery, the first author observed three out of seven parent training sessions at each participating school, using a checklist to assess adherence to program guidelines. This checklist entailed topics such as evaluation of the previous EEH theme, use of the trained techniques (e.g., role-play, modeling), and use of open questions and concrete examples. Overall, the quality of delivery was quite high across schools, with one exception. In this school the teacher failed to adequately address the new theme in class and the activities for the upcoming EEH theme in all of the observed training sessions. In the remaining schools, most sessions were in line with program guidelines. Nonetheless, all teachers largely ignored transfer of program skills to daily situations outside of program time, with one exception. Regarding explanation of the upcoming EEH theme, three of the proposed techniques—modeling, enacting, and role-play—were hardly ever used by any of the teachers.

Analyses

We estimated, a priori, that a sample of 128 children was needed to test the intervention effects with a two-sided test, an alpha of .05 and a statistical power (1- β) of .80 (Cohen, 1988). The power analyses were based on the overall moderate effect size (Cohen's d = 0.50) of FLPs found in recent meta-analyses (Mol et al., 2008; Manz et al., 2010; Van Steensel et al., 2011). For all research questions we employed regression analyses using the program MLWin Version 2.36 (Charlton, Rasbash, Browne, Healy, & Cameron, 2017). When significantly related to outcome measures, relevant background variables (child gender, child age, parent SES, parent ethnic-minority status, and home language) were added to the models as covariates. Our data are hierarchical, that is, measurements are nested within pupils, pupils are nested within classes, and classes are nested within schools. Because of this hierarchical structure, we first of all tested for significant variance on the upper levels, to determine whether or not we should employ multi-level analyses. For each set of outcome measures, which differed per research question, decisions were made regarding the most appropriate strategy to model growth (growth model, pre-test as covariate, or change scores).

Research Question 1 involved effects on children's development, and thus included language, emergent literacy and receptive vocabulary as outcome measures. To analyze language scores we fitted a growth model to the data, as we had three measurement points (see Figure 3.1). Exploration of intercept-only models showed significant variance in language scores on all four levels (see Appendix B.2, Table B.2.1). Hence, we proceeded with a four-level growth model. Emergent literacy and receptive vocabulary were measured at two time points. Following Van Breukelen (2013) we used change scores to conduct these analyses, as we were dealing with: 1) a quasi-experimental setting without randomization, and 2) existing groups (i.e., classes). Because we found significant variance in change scores for emergent literacy on the class level, we proceeded with a two-level model (pupils and classes; see Appendix B.2, Table B.2.3). We found no significant variance on the class- or school-level for receptive vocabulary, and hence analyses involving this outcome measure were conducted uni-level (see Appendix B.2, Table B.2.5).

The second research question involved possible mediation of intervention effects by enactment variables (see Figure 3.2), which we tested following the Baron and Kenny (1986) method. We first examined relations between EEH and child development, followed by relations between EEH and growth on enactment variables (mediators), and finally, relations among growth in enactment variables and child development, after controlling for the effect of condition. The first and third steps for testing mediation included language, emergent literacy and receptive vocabulary as outcome measures and hence were analyzed as described in the previous paragraph (Research Question 1). Change scores on our mediator variables (HLE, PSE, and NPA) showed no significant variance on the upper levels and thus were analyzed uni-level (see Appendix B.3, Tables B.3.1-B.3.3).

The third research question again involved the same child outcome measures as in Research Question 1 and 2, but now the sample included only experimental group children (see Figure 3.3), and hence the multi-level structures were explored separately. Language scores were analyzed using a growth model with two levels: time and pupil (see Appendix B.4, Table B.4.1). Change scores on emergent literacy were analyzed using a two-level model with pupils and schools (Appendix B.4, Table B.4.4), and change scores on vocabulary were analyzed uni-level (Appendix B.4, Table B.4.6).

The fourth research question regarded the prediction of implementation quality and thus included both receipt and enactment variables as outcomes. For receipt we were interested in examining whether parent characteristics would predict overall implementation quality. Therefore, we analyzed sum scores for attendance, diaries, and activities, and mean scores for program activity (PA). Attendance scores were analyzed with a two-level model

consisting of schools and pupils (see Appendix B.5, Table B.5.1). Diary scores were analyzed with a pupil and a class level (see Appendix B.5, Table B.5.2). Sum scores for the number of activities conducted were analyzed uni-level (see Appendix B.5, Table B.5.3). PA was analyzed uni-level, as no significant variance was found on the upper levels (see Appendix B.5, Table B.5.4). With respect to enactment variables (HLE, PSE, NPA), we were interested in examining whether targeted behaviors and practices increased and whether low-SES and ethnic-minority families' growth on enactment variables was different from that of higher-SES and native Dutch parents. Therefore, we analyzed change scores. For change in HLE, PSE and NPA, no significant multi-level structures were found, and hence, all analyses including these variables as dependent variables were conducted uni-level (see Appendix B.5, Tables B.5.8-B.5.10).

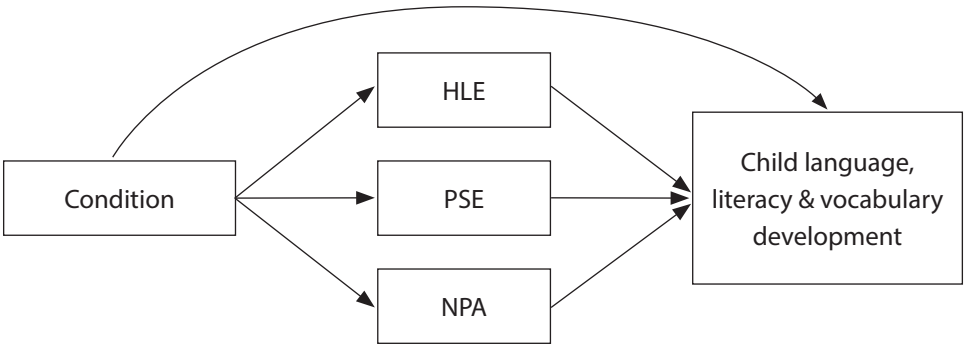

FIGURE 3.2. Mediational Model for Enactment Variables

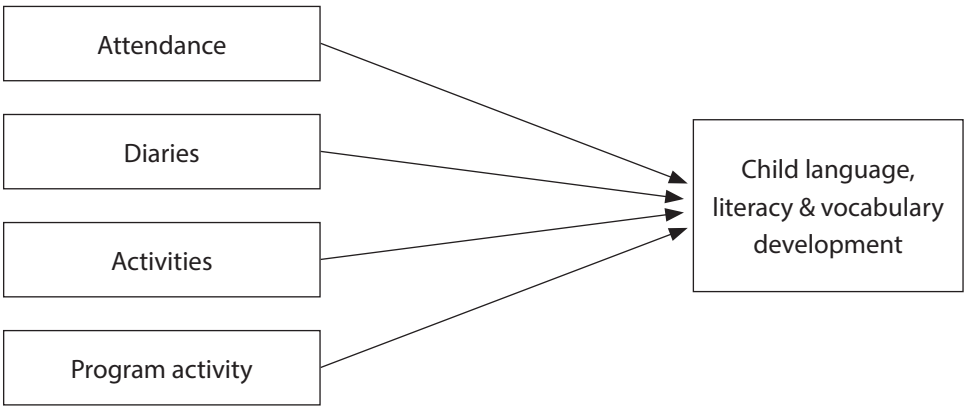

FIGURE 3.3. Model for Receipt Variables

RESULTS

Descriptive Statistics

The descriptive statistics for child outcomes, receipt, and enactment variables are presented in Table 3.3. First of all, the table shows that language and literacy scores where higher at post-test than at pre-test. This was not the case for the three parent enactment variables that were expected to mediate intervention effects. For example, the overall quality of parents' behavior and language during the NPA slightly decreased over the year.

Average scores on receipt quantity variables revealed that parental engagement in the program was not optimal: on average, parents returned approximately 4 out of 7 diaries and conducted about 60% of program activities. As the end of the intervention year approached, we witnessed a decline in attendance, diaries handed in, and activities conducted. Conversely, there was a slight increase in receipt quality (PA).

Effects of the EEH Intervention

Regarding our first research question, we found no direct effects of the EEH intervention on children's language skills as measured by a standardized language test, their (teacher-reported) emergent literacy skills, and their curriculum-based receptive vocabulary skills. Tables with parameter estimates are presented in Appendix B.2 (Tables B.2.2, B.2.4, & B.2.6).

Mediation of EEH effects by 'enactment'

To test whether enactment variables mediated intervention effects, we first of all analyzed relations between EEH and growth in enactment variables HLE, PSE, and NPA. These were non-significant, indicating that the intervention did not succeed in improving these skills in parents. Second, we analyzed effects of change in enactment on children's language development. HLE, PSE and NPA were found to not significantly predict children's development on any of the language measures. Finally, no significant relations were found between the mediator variables and child outcome measures, while controlling for condition. These results indicate that program effects were not mediated by enactment variables. Tables with parameter estimates are presented in Appendix B.3 (Tables B.3.4-B.3.9).

TABLE 3.3. Possible Scores, Mean Scores and Standard Deviations for Study Variables

		Control group				Intervention group			
		Pre-test		Post-test		Pre-test		Post-test	
Measures	**Possible scores**	***M (SD)***	***n***	***M (SD)***	***n***	***M (SD)***	***n***	***M (SD)***	***n***
Child outcomes									
1. Language[a]	0-108	51.63 (12.31)	92	67.06 (10.99)	85	52.08 (12.28)	112	67.09 (10.61)	108
2. Literacy	1-5	2.78 (.85)	98	3.67 (.87)	92	2.82 (.86)	119	3.73 (.88)	115
3. Vocabulary	0-43	30.27 (5.42)	97	34.6 (4.04)	91	30.93 (4.76)	119	35.41 (3.68)	114
Implementation quality									
Enactment									
4. HLE[b]	1-4	2.11 (4.1)	95	2.12 (.46)	75	2.16 (.44)	119	2.12 (.42)	110
5. PSE	1-5	3.86 (.5)	93	3.82 (.45)	74	3.81 (.47)	116	3.81 (.38)	108
6. NPA	1-4	2.80 (.58)	72	2.70 (.62)	65	2.95 (.63)	81	2.75 (.63)	81
Receipt									
7. PA	1-4					2.62 (.77)	81	2.83 (.77)	80
						Overall			
8. Attendance	0-100%					71.43 (29.53)	113[c]		
9. Diaries	0-7					4.33 (2.40)	119		
10. Activities	0-100%					61.03 (23.72)	75[d]		

Note. PA = Program Activity. [a] Mid-intervention language scores are not presented in the body of this table to improve readability. Control group: *M (SD)* = 63.85 (11.63), intervention group: *M (SD)* = 62.24 (11.52). [b] HLE is coded from daily (1) to almost never (4) whereas for the other measures a higher score indicates more positive results. [c] Average sample size for mean attendance (range 111-118). [d] Average sample size for activities (range 50-93).

The role of 'receipt'

In answering our third research question, we analyzed relations among receipt variables and children's language and literacy development. None of our receipt variables—attendance at training sessions, diaries handed in, activities conducted, and quality of behavior and language during a program activity (PA)—significantly predicted children's language and literacy development. Tables with parameter estimates are presented in Appendix B.4 (Tables B.4.2, B.4.3, B.4.5, B.4.7).

SES, ethnic-minority status, home language, and implementation quality

Regarding our fourth and final research question, we first of all did not find significant relations among parents' SES, ethnic-minority status, and home language, and the following receipt variables: attendance at training sessions, the number of diaries handed in, and the number of activities conducted. Tables with parameter estimates are presented in Appendix B.5 (Tables B.5.5-B.5.7). We did, however, find significant relations between SES and receipt quality, as measured by parents' behavior and language during a program activity (shared reading; see Table 3.4). A higher level of education was associated with a higher mean score on PA. In addition, parents whose home language was different from Dutch and parents who were equally proficient in Dutch and their mother tongue, scored significantly lower on PA than parents who indicated their home language to be Dutch. Finally, non-native Dutch parents scored significantly lower on PA than native Dutch parents. Regarding enactment variables, we found no significant relations among SES, ethnic-minority status, and home language, and change in HLE, PSE, and NPA (see Appendix B.5, Tables B.5.11-B.5.13).

TABLE 3.4. Regression – Predicting Mean PA with Parent Background Variables

Model	0 *B (SE)*	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*
Intercept	2.766*** (0.082)	2.690*** (0.079)	2.977*** (0.088)	2.932*** (0.093)
Parent SES (gm)		0.320*** (0.097)		
Parent home language: Dutch and other equal			-0.569** (0.207)	
Parent home language: other			-0.706*** (0.193)	
Parent ethnic-minority status (ethnic-minority = 1)				-0.508** (0.162)
Variance	0.445 (0.077)	0.383 (0.066)	0.352 (0.061	0.388 (0.067)
Deviance	135.898	125.802	120.218	126.724
Reference model		0	0	0
Fit improvement		$\chi^2 = 10.096$ df = 1 $p < .01$	$\chi^2 = 15.680$ df = 2 $p < .001$	$\chi^2 = 9.174$ df = 1 $p < .005$
R^2		0.139	0.209	0.128

Note. N = 67. gm = grand mean centered. Parent home language reference category = Dutch. * $p < .05$; ** $p < .01$; *** $p < .001$.

DISCUSSION

We examined implementation quality and effects of an intervention program focused on engaging parents in their children's early language and literacy development. Earlier results of such interventions underline the importance of examining implementation quality (Van Steensel et al., 2011, 2012), as this seems key to understanding variability in intervention effects (Durlak & DuPre, 2008). We evaluated the outcomes of EEH. Following a constructivist perspective, EEH aims to stimulate kindergartners' language and literacy skills by improving the frequency and quality of informal home literacy practices as well as the degree of parent self-efficacy.

Regarding our first research question, results indicated no main intervention effects on children's language and literacy skills. With respect to our second research question, we found that the EEH intervention did not improve the home literacy environment, parent self-efficacy, and quality of parents' behavior and language during a non-program activity. Furthermore, changes in these enactment variables were not associated with children's language and literacy development. In other words, the intervention did not contribute to children's language and literacy skills, neither directly nor through an impact on parent

variables. Regarding our third research question, we found that none of our receipt variables—attendance at training sessions, diaries handed in, activities conducted, and quality of behavior and language during a program activity—significantly predicted experimental children's language and literacy development. This means that quality of program implementation by parents did not affect the rate at which children developed their language and literacy skills. Regarding our fourth and final research question, no significant relations were found among parental SES, ethnic-minority status, and home language, and the receipt quantity variables: attendance at training sessions, the number of diaries handed in, and the number of activities conducted. We did, however, find significant relations among these parent background variables and receipt quality, as measured by the observed quality of behavior and language during a program activity (shared reading). Higher-educated parents generally showed higher quality of behavior and language during this activity. This was also the case for native Dutch parents, compared to ethnic-minority parents, and for parents who had indicated that Dutch is their home language, compared to parents who indicated to be equally proficient in Dutch and their mother tongue, and parents who indicated to be more proficient in their mother tongue. Regarding change in enactment variables (HLE, PSE, NPA) we found no significant relations with parent background characteristics, indicating that change in targeted behaviors and practices did not differ for low- and high-SES parents, nor for ethnic-minority and native Dutch (speaking) parents.

An important question that springs from the current findings is: how can the lack of intervention effects be explained? One explanation involves the effect of a third implementation element, delivery (Powell & Carey, 2012), which we were not able to include in our effect analyses, as it is a teacher variable and the number of teachers in our sample was too small for statistical analyses. However, we did observe this element of implementation quality to be suboptimal. First of all, transfer of program skills to daily situations outside of program time was largely ignored by teachers in parent meetings. In other words, delivery of the EEH intervention was not focused on stimulating parents' enactment of learnt skills to their day-to-day lives. This possibly (partly) explains why we did not find the intervention to enhance the quality or quantity of the HLE, by which parents supposedly would have influenced their child's development.

A second, related issue, is that although EEH is specifically developed for low-educated and ethnic-minority parents, in practice, a broad range of parents is involved. Such high group diversity poses significant challenges for program delivery. During parent meetings

we observed, this sometimes resulted in trainers focusing on a certain subgroup of parents, while ignoring the needs of others. We observed that techniques specifically targeting low-SES and ethnic-minority parents (modeling, enacting, and role-play) were hardly used during training sessions by our intervention group teachers, even though we had trained and coached teachers in using these techniques. Several explanations for this finding were offered by teachers in post-intervention interviews. Some teachers were apprehensive of using role-play and enacting because they expected higher-educated parents to perceive these techniques as unnecessary and childish. In one school, the intervention group was particularly large (34 parents) and diverse, consisting of a majority of highly educated parents and a minority of low-educated and ethnic-minority parents. The teacher explained that she focused on the abilities of the largest group, resulting in a drop-out of minority (low-SES and ethnic-minority) parents. Teachers in groups with a majority of low-SES and ethnic-minority parents on the other hand, were afraid that role-play would scare them off and that it would refrain them from attending the remaining meetings. Similar findings have been reported in previous studies, for example by Hebbeler and Gerlach-Downie (2002), who found that program deliverers placed little emphasis on changing parenting behavior, even though this was an explicit goal of the program. Deliverers explained that they wanted to prevent parents from feeling pressured and that they were ambivalent about their own level of parenting expertise. This suggests that trainers sometimes feel reluctant to endorse certain program components (see Chapter 2). It is possible that the observed differences between low- and high-SES parents, and native Dutch and ethnic-minority parents regarding quality of program receipt would have been smaller, had the delivery been more tailored to these subgroups. In turn, this might have led to improved outcomes for children with low-SES or ethnic-minority parents, as a function of the intervention.

Third, the language of instruction during parent meetings was Dutch, which likely resulted in less optimal program delivery for parents with limited Dutch proficiency. It is probable that at least part of the 13% of parents who indicated in the parent questionnaire that Dutch was not their home language, experienced difficulties in comprehending the training sessions. This might (partly) explain the lack of intervention effects found, at least for some children from ethnic-minority families. Limited language proficiency may have also played a role in implementing program activities. Although program theory recommends parents to conduct the program in their dominant language, only two parents made use of translated materials. Three parents reported to conduct program activities in their mother tongues and seven parents used a mixture of Dutch and their mother tongues. Some parents might have

struggled to conduct the program in Dutch. This is supported by our finding that parents with a mother tongue other than Dutch were able to realize less stimulating parent-child interactions than native Dutch speaking parents.

Finally, regarding the quantity of delivery, we observed the duration of the parent meetings, and thus the opportunity to give in-depth instructions for program activities, to vary significantly across schools. During post-intervention interviews, teachers reported believing that the prescribed time for parent meetings would be too long for parents. Swain, Cara, Vorhaus, and Litster (2015) reported similar findings. Across multiple FLPs implemented in the UK, the amount of contact time was shorter than program guidelines suggested.

Regarding our third research question we found no relations between receipt and child development. Previous research shows mixed results on this matter, with some studies reporting results similar to ours (Hargrave & Sénéchal, 2000; Van Tuijl et al., 2001), while others did find significant relations (Jordan et al., 2000). Van Tuijl et al. (2001) made a comparable observation in their evaluation of the 'Opstap Opnieuw' program regarding receipt of the intervention. Opstap Opnieuw is a Dutch FLP similar in design to EEH, in that a range of literacy-related activities are offered to parents and children. It differs in delivery format, however, as Opstap Opniew is mainly delivered via home visits. Similar to our operationalization of receipt (minus the home visits), Van Tuijl et al. (2001) measured the number of activities carried out, the number of home visits, and the number of attended group training sessions. The authors suggest that, in their case, most families had encountered an implementation 'ceiling', after which variation in implementation could not explain additional variation. This explanation seems unlikely in the case of our study however, as average scores on implementation variables were not particularly high. On the contrary, it seems more plausible that, particularly the low-SES and ethnic-minority parents in our sample did not cross an implementation threshold (at least for certain variables, such as quality of behavior and language and parent-self efficacy) for these aspects of implementation to exert a meaningful influence on children's development.

Another possible explanation for the lack of significant relations between receipt and children's development, is that our selected variables were not the most relevant indicators of implementation quality. This might be particularly true for attendance at parent meetings, as parents can attend a training session regardless of whether they understand what is being explained to them (Jordan et al., 2000). The same can be said for parents' engagement in activities: even if parents report a high engagement in program activities, this does not necessarily mean that the quality of these activities is sufficient for children to benefit from

the program. However, parents' engagement in training and activities can be seen as a prerequisite: if engagement is low, it is unlikely that parents will learn and apply program strategies. Furthermore, other variables possibly influenced children's development, such as parents' understanding of the program content that was explained during training sessions, and parental beliefs regarding how to best stimulate their child's development. A match between parents' goals and program objectives, for example, has been shown to promote positive intervention outcomes (Timmons & Pelletier, 2014). Future intervention studies might incorporate additional receipt variables, such as parental beliefs, in order to examine their influence on variation in program implementation.

Limitations

Several study limitations are worthy of note. First, we were not able to randomly assign groups to conditions. However, no significant differences were found between conditions on pre-test scores and relevant background characteristics of parents and children (child gender and age, parental SES, ethnic-minority status, and home language, richness of the HLE and parent self-efficacy), suggesting that conditions were comparable on possible confounding variables.

Second, although we included large scale observational data in our analyses, we also partly relied on parent self-report measures. Naturally, these must be interpreted cautiously. For example, there are concerns about the validity of parent reports of home literacy practices because of the high cultural value placed on these activities that may lead parents to exaggerate their reports (Deckner, Adamson, & Bakeman, 2006).

Third, due to the limited number of schools and classes in our sample, we were not able to include delivery in our analyses, even though the variety we observed may have affected the manner in which program contents were transferred to parents. Future research should address the role of delivery in explaining program effects in a quantitative manner.

Finally, EEH program theory recommends parents to conduct the program in their most proficient language. Knowledge and skills acquired by children in the first language can then be transferred to the second language (Cummins, 1991). However, we were not able to test whether this transfer occurred, as our sample included a very limited number of ethnic-minority parents who conducted the program in their mother tongue. Furthermore, we did not test children's language and literacy skills in other languages than Dutch. We recommend future researchers to test this hypothesis in the context of multilingual family literacy interventions (for an example, see Hirst, Hannon, & Nutbrown, 2010).

Implications for Policy and Practice

Although teachers were trained during multiple well-prepared sessions, coached, and observed during program delivery to ensure fidelity, delivery of the intervention was found to be suboptimal relative to program guidelines. Transfer of program skills to daily situations outside of program time was largely ignored, techniques specifically targeting low-SES and ethnic-minority parents were hardly used, and the majority of teachers were found to deviate from duration guidelines for parent meetings. A certain level of apprehension was found among trainers to follow guidelines, which was also reported in previous studies (De la Rie et al., 2016; Chapter 2; Hebbeler & Gerlach-Downie, 2002; Swain et al., 2015). The main reason for this appeared to be the large diversity among parents. Program deliverers (teachers in the case of EEH) are often confronted with a very diverse group of parents. In order to realize more differentiation in program delivery, it could be beneficial to divide participating parents over multiple groups according to their need for guidance. However, this warrants caution, to prevent parents from feeling stigmatized.

Another route could be to deliver the program via additional home visits. This approach has been found to be more effective than a center-based approach (Manz et al., 2010) and has the advantage that delivery can be tailored to the individual needs of parents. A number of FLPs that made use of home visits with disadvantaged families showed significant effects on child outcomes (Aram et al., 2013; Hannon, Morgan, & Nutbrown, 2006; Hirst et al., 2010; Sylva et al., 2008). Moreover, provided that bilingual deliverers are available for intervention implementation, parents can be instructed in their home language. Findings by Hirst et al. (2010) suggest that home visits in parents' home language is a beneficial way of delivering FLPs in these families.

Another route to optimize delivery departs from teacher education. Previous research on this topic in relation to parental involvement has established that teacher education falls short of helping teachers acquire and develop the necessary interpersonal skills to engage and communicate with parents (Epstein & Sanders, 2006; Ferrara & Ferrara, 2005; Lawrence-Lightfoot, 2003). We therefore argue that teachers need additional training in engaging and communicating with families from various socio-economic and cultural backgrounds, in order to successfully deliver FLPs to parents and children. Recognizing this and incorporating additional training when preparing teachers to deliver FLPs, can be a valuable step for FLP-developers.

Finally, another area for improvement might be the program activities used in programs such as EEH. It could be hypothesized that these activities do not align with participating families' literacy practices in all cases. In the late eighties, FLPs have been criticized by researchers who pointed out that these programs were mostly based on mainstream Western pedagogies, and ignored the cultural capital of ethnic-minority families (Auerbach, 1989; Moll et al., 1992). More recently, Manz et al. (2010) argued for a more partnership-driven approach to intervention research. Such an approach relies heavily on active involvement of stakeholders (e.g., parents and children), in order to form theories and methods that underlie study designs (Fantuzzo, Weiss, & Coolahan, 1998). Specifically, incorporating more culturally sensitive program materials, for example by co-constructing activities with participating families (Anderson et al., 2011), might benefit implementation quality for parents from various cultural backgrounds.

04

Parent-child interactions during prompting boards and shared reading

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ABSTRACT

To examine what kinds of parent-child interactions are elicited by different literacy-related activities, an exploratory study was conducted with nineteen mother-child dyads. Although prompting boards are widely incorporated in pre- and primary school curricula, and in various Family Literacy Programs, scientific knowledge supporting their use is lacking. Within the context of the Dutch Family Literacy Program 'Early Education at Home' (Dutch Youth Institute, 2012), we compared levels of abstraction in parent-child interactions during prompting boards to an activity that has been researched extensively: shared reading. Our results show that children's contributions to the interactions are significantly larger during prompting board activities than during shared reading. Utterances of a higher level of abstraction were generally more prevalent during shared reading. However, we also found that mother's inference making utterances—the highest level of abstraction— were more characteristic of prompting board discussions. Implications for research and practice are discussed.

INTRODUCTION

Literacy is a key factor in educational success and in the development of a broad range of skills required in today's knowledge economies (Carpentieri, Fairfax-Cholmeley, Litster, & Vorhaus, 2011). However, many children lag behind in reading and writing skills. Such skill differences between children can be partly explained by variation in their home literacy environments (Bradley, Corwyn, McAdoo, & García Coll, 2001; Scheele, Leseman, & Mayo, 2010): children who grow up in print-rich environments have important advantages over children whose parents rarely engage them in literacy-related activities. This observation has led to the development of Family Literacy Programs, aiming to promote children's literacy development by stimulating their home literacy environments, particularly in at-risk families (Carpentieri et al., 2011; European Commission, 2012; Wasik & Van Horn, 2012).

Previous research has shown that both the quantity of home literacy activities (how often do parents engage in activities with their children) and the quality of these activities (in particular the quality of parent-child interactions) positively influence various literacy skills (Huttenlocher, Waterfall, Vasilyeva, Vevea, & Hedges, 2010; Rowe, 2012). When describing the characteristics of such parent-child interactions researchers use a broad range of categories referring to various 'communicative functions': content-related speech (Hammett, Van Kleeck, & Huberty, 2003; Van Kleeck, Gillam, Hamilton, & McGrath, 1997), interactional or interactive utterances (Halliday, 1973; Sorsby & Martlew, 1991), feedback and acknowledgement utterances (Joyner, 2014), and regulatory (Deckner, Adamson, & Bakeman, 2006; Halliday, 1973) or child management utterances (Sorsby & Martlew, 1991).

In this study we focus particularly on the former category—content-related speech—which can be characterized by the representational/cognitive demand it places on the child. This demand refers to parents' ability to scaffold the development of their child's competence in dealing with abstract representations (Blank & Solomon, 1968). This ability has been studied extensively in emergent literacy research and is also referred to as the ability to comprehend and produce 'decontextualized information' (Curenton, Craig, & Flanigan, 2008; Hindman, Connor, Jewkes, & Morrison, 2008; Snow, 1983), 'non-immediate talk' (Beals, De Temple, & Dickinson, 1994), 'meaning-focused talk' (Hindman et al., 2008), and 'teaching talk' (Korat, 2009), which can be defined as language "where children must verbally move beyond the immediate conversational context to create and re-create events, analyze experiences, and share opinions and ideas" (Smith & Dickinson, 1994, p. 347). Reference can also be made to Sigel's (1970, 2002) concept of distancing (see also Korat, 2009). In the context of shared reading, so-called 'distancing demands' have been described as 'verbal interactions that

force the child to distance him or herself (through representation) to a greater or lesser extent from the immediately present and observable context' (Palacios et al., 1992, p. 73). High-level distancing demands are thought to most stimulate the representational competence of children and this competence, in turn, is an important component of children's literacy development, because it aids later reading comprehension (Serpell, Baker, & Sonnenschein, 2005; Sorsby & Martlew, 1991; Van Kleeck, 2008). Various shared reading interventions, such as Dialogic Reading (Arnold & Whitehurst, 1994; Lever & Sénéchal, 2011) and Conversational Reading (Ramey, Sparling, & Ramey, 2014), encourage parents to engage their children in such cognitively demanding interactions using non-immediate talk.

In order to measure stimulation of representational competence in parent-child interactions, Sorsby and Martlew (1991), Van Kleeck et al. (1997) and, more recently, Price, Van Kleeck, and Huberty (2009) used a scale distinguishing between four levels of abstraction, based on earlier work by Blank, Rose, and Berlin (1978a, 1978b). These levels of abstraction range from non-abstract, within-context language, to out-of-context language. In the case of shared reading, utterances relating to directly visible illustrations (e.g., labeling) are assumed to place a relatively low demand on the child's cognitive and language abilities, whereas relating to the child's personal experiences and making inferences about images or ideas—not directly visible within the story context—are more challenging. Sorsby and Martlew (1991) examined the use of representational demand in different contexts: they compared parent-child interactions during picture book reading with play-doh modelling and found the former activity to elicit a greater proportion of utterances on a higher level of abstraction. Although content-related utterances took up more of the conversation in the play-doh activity, these utterances were mainly at a lower level of abstraction compared to the book reading activity. The authors conclude that interactions during picture book reading required more expansions beyond what was perceptually available compared to during play-doh modelling. Snow and Ninio (1986) argued that reading story and picture books elicit more abstract language, because parent-child activities around such books require little physical action. Consequently, parent and child can focus fully on the book's content, that is, on its symbolic representations. Activities such as object building and play-doh modelling, on the other hand, require physical manipulation and thus provide fewer opportunities for symbolic talk. However, Sorsby and Martlew's finding (i.e., more content-related talk during play-doh modelling versus picture book reading) seems to contradict this statement, at least for these specific activities.

Studies in which activities are examined that require physical manipulation, show that these activities generally elicit fewer higher-level interactions, compared to shared reading (Snow et al., 1976; Yont, Snow, & Vernon-Feagans, 2003). Apart from shared reading, there are other activities that do not require physical manipulation and thus create more opportunity for symbolic talk. Yont, Snow, & Vernon-Feagans (2003) nevertheless observed that remarkably few studies have compared parent-child interactions across such activities. A literature search in relevant databases (e.g., ERIC, ScienceDirect, Scopus) largely confirmed Yont et al.'s observation, although we found a few exceptions. Crain-Thoreson, Dahlin, & Powell (2001) compared three different contexts—book reading, remembering a family outing, and toy play—and found that book reading was characterized by more linguistic complexity (in terms of utterance length as well as richness of vocabulary) than remembering, and remembering was characterized by more linguistic complexity than play. In another study, Korat (2009) compared parent-child interactions during a book reading activity with a photo-album activity and concluded that book reading elicited more abstract talk by mothers. However, the author does argue that although the photo-album activity elicited less distancing utterances compared to book reading, it did provide mothers with a rich base for discussing various challenging topics with their child. This finding suggests that abstract talk is not limited to reading or other text-related activities (Korat, 2009). In summary, the extent to which parents and children engage in more abstract, representationally demanding interactions (partly) depends on the type of activities that parents and children engage in. More specifically, shared reading seems to elicit the most representationally demanding talk, assumedly caused by the inherent focus on symbolic content as opposed to, for instance, physical manipulation.

Another activity that focuses exclusively on symbolic exchange and that has, to the best of our knowledge, not been the object of studies as the ones described above, is the use of 'prompting boards'. Prompting boards consist of complex pictures around a certain theme, depicting a scenario (i.e., pictures that suggest a sequence of events) related to this theme. An example for the theme 'Autumn' is provided in Appendix C.1 (p. 188). Prompting boards are commonly incorporated into pre- and primary school curricula worldwide, parents encounter them on numerous websites for stimulating home literacy activities[1], and there are books on the market with prompting board-like pictures (e.g., the well-known 'Wimmelbooks', which consist of series of individual, complex pictures; Rémi, 2011). Prompting boards are also used in various (Dutch) Family Literacy Programs and by a major

1. See for example websites such as www.literacyshed.com and www.kleuterportaal.nl/schoolborden/catalogus.html?vakgebied=praatplaten and www.highlightskids.com/hidden-pictures

Dutch testing and assessment company in the field of education (Cito). Like picture/story books, they provide opportunities for promoting children's representational competence through eliciting stimulating teacher- or parent-child interactions about their symbolic content. For example, the prompting board in Appendix C.1 (p. 188) shows a hedgehog getting splashed and a fox laughing at it. A parent might prompt the child by asking "Why do you think the fox is laughing?". We also see a bee flying around, looking angrily at the fox, implying that it might try to sting. The child could predict that the bee is going to punish the fox for laughing at the hedgehog. Because of their comparability with picture/story books as an activity focused on symbolic content, it is interesting to examine whether both activities elicit representationally demanding talk to a similar extent. If so, this would make prompting board activities a viable addition or alternative to shared reading activities in Family Literacy Programs.

Despite their comparability, there are differences in the nature of prompting boards and shared reading that could trigger differences in parent-child interactions. Whereas shared reading is a script-structured activity, a prompting board is more open-ended and does not provide parents with a written storyline. During shared reading parents could merely read the text and end the activity after the final sentence has been read. During prompting board activities, however, parents and children are more or less compelled to engage in (extended) talk, since they are not aided by the presence of text. For example, in the Family Literacy Program that forms the context of this study, the prompting board for the 'autumn' theme (see Appendix C.1) depicts a squirrel covering its ears while looking angry, and birds chirping loudly. This begs the question of "Why does the squirrel look angry?", whereas, in a shared reading activity, an explanation for the angry looking squirrel would likely be given in the storyline. Drawing inferences therefore requires an extra step during a prompting board activity, because the observer (parent or child) needs to link visual images together and formulate a verbal relationship without the aid of a storyline, which could lead to more higher-level interactions compared to shared reading.

For children, an important factor in stimulating parent-child interactions is being able to actively participate in conversations. Within the early intervention context, previous work has demonstrated that sharing books in a manner that is interactive and elicits the child's participation achieves even larger effect sizes in fostering children's language growth, compared to simply increasing book reading frequency (Bus, Van IJzendoorn, & Pellegrini, 1995; Elbro & Scarborough, 2003). Given their non-scripted nature it might be that prompting boards are particularly suited to elicit child speech, possibly even more so than (scripted) shared book reading. Therefore, we are also interested in comparing the size of children's contribution to the conversation during both tasks.

The major study goal is to make a comparison of parent-child interactions during prompting board activities and shared book reading, with a focus on the presence of representationally demanding talk, by both parents and their children. We make this comparison within the context of a Dutch Family Literacy Program called 'Early Education at Home' (EEH; Dutch Youth Institute, 2012). This program focuses on kindergartners and their parents, especially from lower socio-economic and ethnic-minority backgrounds, and aims to stimulate children's language, cognitive and social-emotional skills. In order to accomplish this, parents and children are offered a range of literacy-related activities around certain themes. Every few weeks a new theme with related activities is handed out and explained to parents during a group meeting at school. These meetings are often lead by the children's teachers and last between 60 and 90 mins each. Prompting boards and shared reading are two of the central activities offered in this program.

Research Questions

Within this context, the following research questions will be addressed:

1. How much content-related talk occurs during prompting boards and shared reading activities, compared to talk within other communicative functions?
2. Are there differences in the level of abstraction of parent-child interactions between prompting boards and shared reading activities?
3. Are there differences in parent and child contributions to the conversation during both activities?

Regarding our first and second research question, we expect both activities to elicit content-related utterances and utterances of a high level of abstraction (outside of the visible context), as neither require a focus on physical manipulation. However, during prompting board activities parents and children are more or less compelled to engage in talk, since they are not aided by the presence of a storyline. Meaningful interactions about prompting boards requires inferencing, because the observer (parent or child) needs to link visual images together and formulate a verbal relationship without the aid of a storyline, in which inferences are readily presented to parents and children. Therefore, it is possible that prompting boards elicit even more content-related utterances and a higher level of abstraction than shared reading activities. Regarding our third research question, we expect children's contribution to the conversation to be larger during discussions of prompting boards, as its non-scripted nature might leave more opportunity for children to contribute on their own terms.

METHOD

Participants

We observed 19 dyads participating in EEH during the school year of 2012-2013. Our sample included 13 boys and six girls, recruited from six different Dutch primary schools involved in the program. All participating children were attending kindergarten and were in the age range of four to six years. Parents—all mothers—participated in this study on a voluntary basis. In return for their cooperation they received a €20 gift card. Most of the participating parents had attained a senior secondary vocational degree (see Table 4.1). Ten parents were born in the Netherlands, while the other nine had migrated to the Netherlands from Morocco (4 parents), Turkey (2 parents), Egypt (1 parent), Syria (1 parent), and Portugal (1 parent).

TABLE 4.1. Mother's Educational Attainments

	Number of mothers
Elementary school	1
Junior general secondary education	2
Preparatory secondary vocational education	2
Lower vocational education	1
Senior secondary vocational education	10
Higher professional education	2
University degree	1

Procedure

Parents were initially approached by their child's teacher. Parents who consented to participate were asked to execute two program activities: a shared reading activity and a prompting board activity. The majority of observations were conducted during the first half of the school year, in late autumn and winter. The first and second author were aided in conducting the observations by research assistants, who were bachelor or master students of social sciences. The assistants were trained by the first and second author. The first session prepared the assistants for the practicalities of data collection (e.g., instructing parents on the two tasks, use of the camera during observations) and lasted approximately three hours. After data collection, the assistants were trained to use the coding scheme that was used to analyze the transcripts of parent-child interactions. For this second part of the training,

25% of the transcripts were coded simultaneously by all three coders. The codings were discussed in an iterative process over a total of five sessions, lasting three hours on average. During each session, one or two transcripts were discussed, codings were compared, and disagreements were resolved. On the basis of this information, the coders coded a new transcript, which was then discussed in a subsequent session, et cetera.

Observations were recorded on video and participants were asked to behave as they normally would, and encouraged to ignore the fact that they were being recorded. The observers interacted minimally with the participants once the videotaping commenced. Mother-child interaction during shared reading lasted 9 mins and 55 s on average. This includes mothers' literal reading of the storyline. The prompting board activities lasted on average 4 mins and 41 s.

Instruments

Activities

During each observation, the mother-child pairs were provided with an illustrated story and a prompting board that were part of the EEH program. The activities could vary across participating families: schools select program-themes on the basis of themes that are used in the kindergarten classrooms. Since this study was part of an implementation study of EEH, the selection of activities for each mother-child pair depended on the selection of themes made within each school. That is, when the theme of choice in the period we visited the school was 'Autumn', mother and child were asked to read the story and discuss the prompting board for that particular theme. The observed activities included five different prompting boards and stories from three different program themes ('Autumn', 'Winter', and 'Art'). These activities were selected by the program developers to be similar in their degree of difficulty and of equal interest to children. The stories were all written for this age group by well-known children's literature writers.

Coding Scheme

To gain insight into the extent to which interactions are abstract, parent-child interactions during prompting boards and shared reading were transcribed and coded with the aid of a coding scheme (see Appendix C.2). This scheme was adapted from the schemes used by Van Kleeck et al. (1997) and Sorsby and Martlew (1991), which are, in turn, based on the four levels of abstraction developed by Blank et al. (1978a, 1978b).

Coding was done using both the transcript and the video record. Utterances in the transcripts were distinguished aided by the 'unit of meaning' concept, a unit that represents a thematically consistent verbalization of a single speech act, that is, each utterance or combination of utterances by an individual interlocutor having an individual communicative function (De Backer, Van Keer, & Valcke, 2012); for operationalization of communicative function, see further. For the shared reading activity, only extra-textual utterances were transcribed and coded. In line with Van Kleeck et al. (1997), we refer to extra-textual utterances as spontaneous utterances that were excursions beyond literal reading of the storyline.

Because the levels of abstraction were coded exclusively within the category of content-related talk, and other types of utterances (i.e., other than content-related talk) also occur in parent-child interactions, we additionally coded these other categories. Both content-related talk and these other categories are subsumed under 'communicative functions'.

Communicative Functions

We first of all distinguished three mutually exclusive communicative categories: content-related speech, feedback and acknowledgement utterances (Joyner, 2014), and procedural utterances (see Appendix C.2 for examples). Additionally we distinguished off-task utterances, ambiguous utterances, and inaudible speech. Content-related speech refers to all utterances regarding the content of the story or the images on a prompting board. Content-related speech was coded further into four levels of abstraction (see following paragraph). The feedback and acknowledgement category is based on a study by Joyner (2014) and refers to expressions of encouragement, clarifications, and pausing to overthink the next step in the interaction process. Procedural utterances include remarks regarding the course of the activity that is being executed. These include utterances that refer to how to deal with the activity at hand—duration of the activity and parent and child taking turns—and, for shared reading, utterances related to book conventions. Off-task utterances include any remarks that show the parent or the child is preoccupied with something other than the offered activity. The 'ambiguous' category consists of utterances of which coders could not tell in which category the utterance was best placed. Lastly, a number of utterances were inaudible and were coded accordingly.[2]

2. Ambiguous and inaudible utterances are not included in the results section because they occurred sporadically.

Levels of Abstraction

Level of abstraction forms the focus of our study. On the basis of Blank et al. (1978a, 1978b), Sorsby and Martlew (1991), and Van Kleeck et al. (1997), we distinguished four levels of abstraction (see Appendix C.2 for example utterances). Only content-related utterances were coded according to their level of abstraction. Level I, 'matching perception', is the lowest level of abstraction. This level includes parental speech about the directly visible context. Level I questions and comments involve labeling (I A), locating (I B), and noticing directly visible and concrete items (I C), such as objects or characters pictured in a storybook or on a prompting board. Level II, 'selective analysis and integration of perception', places a slightly higher representational demand on the child. This level includes questions or comments that require the child to focus on specific aspects of objects and characters (II A), or events and actions (II B). Comments and questions at Level III ('reorder/infer about perception') move beyond the immediate context. Utterances include connecting parts of the story or different images within a prompting board (III A). This level also involves defining words encountered in the activity (III B), making comparisons to the child's own life experiences (III C), and discussing personal opinions (III D). Level IV questions and comments ('reasoning about perception') are defined as the highest level of representational demand, requiring thinking about relationships between mental representations of objects or concepts that are not directly visible. These involve making predictions (IV A) and drawing conclusions (IV B).

Intercoder Agreement

Intercoder agreement was computed for two of 19 dyads, by (pairwise) calculating the percentage agreement between the three coders for all utterances in the transcripts of both activities. This resulted in a sufficient overall intercoder agreement of 80.2% (Table 4.2).

TABLE 4.2. Intercoder Agreement

	Coder 1 - 2	Coder 2 - 3	Coder 1 - 3	Average across Coders
Dyad 1 shared reading	73.80%	78.10%	81.90%	77.93%
Dyad 1 prompting board	82.90%	83.80%	82.90%	83.20%
Dyad 2 shared reading	76.92%	82.05%	80.77%	79.91%
Dyad 2 prompting board	74.60%	85.71%	79.37%	79.89%
Average across dyads				80.23%

Analyses

In our analyses, we distinguished between the *amount* of speech (i.e., the total number of utterances during prompting boards and shared reading activities as well as the number of utterances within different categories) and *proportions* (i.e., the share of the total amount of speech that belongs to the various categories). We made this distinction, because outcomes could differ for absolute and relative outcomes. It could be the case, for example, that the shared reading activities lead to more content-related utterances, while the prompting boards elicit a greater proportion of content-related speech.

We performed statistical tests in order to gain insight into effects of type of activity on parent-child interactions. Paired sample t-tests were conducted to analyze differences between activities regarding the amount of speech. For analysis of differences in proportions of speech we used Wilcoxon signed rank tests. These tests were chosen following Field (2009), because we compared two sets of scores from the same participants. In addition, the Wilcoxon signed rank test was chosen because data for some of the variables were non-normally distributed. In order to control the Type I error rate, we made corrections for multiple comparisons through the Benjamini-Hochberg procedure (Benjamini & Hochberg, 1995). We followed this procedure for three separate series of tests, the first consisting of 16 tests for communicative function comparisons, the second consisting of 16 tests for levels of abstraction comparisons, and the third consisting of 44 tests for sublevels of abstraction. We ordered individual *p* values from smallest to largest and compared each *p* value to its critical value. The largest *p* value that is smaller than the critical value is significant, and all of the *p* values smaller than it are significant as well. These critical values were obtained by using the following formula: $(i/m)Q$, where i is the rank, m is the total number of tests, and Q is the false discovery rate. We allowed a false discovery rate of 0.20 (McDonald, 2014).

RESULTS

We first present differences between the shared reading and prompting board activities regarding amount of speech within the distinguished communicative function categories (Research Question 1) and levels of abstraction (Research Question 2). Second, we report results regarding the proportions of parent-child interaction (Research Question 1 and 2). When referring to our sample of dyads, we will be using the term mother-child interaction, as our sample included only mothers and no fathers.

Amount of Parent and Child Speech

Descriptive statistics and paired sample t-test results on the total number of utterances made by mothers and children during prompting board and shared reading activities, are presented in Table 4.3. Overall, mothers made more utterances than their children during both activities. Additionally, neither the total number of mother nor child utterances differed significantly between the two activities.

TABLE 4.3. Total Number of Utterances for Mothers and Children across Activities

	Shared reading		Prompting board				
	M	**SD**	**M**	**SD**	***t***	***p***	***r***
# utterances mother	72,53	44,94	64,74	45,69	.618	.544	.14
# utterances child	42,84	29,77	42,68	35,62	.019	.985	.00

Communicative Function

To establish whether the two activities differ in number of utterances made by mothers and children across communicative functions, we performed multiple paired sample t-tests (see Table 4.4). Overall, most of the utterances made by mothers and children fall within the content-related speech category, followed by feedback and acknowledgement. Mothers used the latter category more often than children do. Procedural and off-task utterances occurred relatively infrequently in either activity. We found no significant differences between prompting boards and shared reading activities in the number of parent or child utterances across the communicative function categories.

TABLE 4.4. T-test Results on Number of Utterances Across Communicative Functions

		Shared reading		Prompting board				
		Mean	**SD**	**Mean**	**SD**	***t***	***p***	***r***
Mother	# Content related	36,63	24,64	34,74	20,03	.285	.779	.07
	# Feedback	26,37	20,80	24,42	23,82	.360	.723	.08
	# Procedural	6,16	3,56	3,58	4,48	1,986	.062	.42
	# Off-task	1,47	1,84	0,95	1,27	1,126	.275	.26
Child	# Content related	25,58	20,39	27,32	19,79	-.360	.723	-.08
	# Feedback	10,37	10,11	10,32	12,15	.019	.985	.00
	# Procedural	2,37	2,52	1,53	2,55	.920	.370	.21
	# Off-task	1,11	1,70	0,32	0,82	1,837	.083	.29

Levels of Abstraction

Zooming in on utterances within the content-related speech category, we tested for differences between the activities across the four levels of abstraction (see Table 4.5). First of all, both activities elicit mother and child utterances on all levels of abstraction. For the prompting board activities, we found more child utterances on the lowest level of abstraction (Level I), compared to shared reading. When looking at sublevels of abstraction, results show that this difference is only significant for labeling-utterances (Level I A). These utterances occurred more often during discussions of prompting boards (M = 7.37, SD = 4.10) compared to shared reading (M =3.32, SD = 4.01), $t(18)$ = -4.20, p = .001, r = -.71. This difference was not significant for mother speech. For shared reading, we found more mother and child utterances on level III, compared with prompting board activities. Level III contains speech that is related to summarizing or integrating different activity elements, defining words, making comparisons to the child's own life experiences, and discussing personal opinions.

TABLE 4.5. T-test Results on Number of Utterances Across Levels of Abstraction

		Shared reading		Prompting board				
		Mean	**SD**	**Mean**	**SD**	***t***	***p***	***r***
Mother	# Level I	7,58	6,09	10,16	4,81	-1,499	.151	.33
	# Level II	9,58	8,56	9,74	6,90	-.062	.952	.00
	# Level III	12,68	9,83	5,95	6,40	3,125	<0.01	.59
	# Level IV	6,79	6,48	8,89	8,48	-1.135	.271	.26
Child	# Level I	5,00	5,33	9,37	5,42	-3.163	<0.01	.59
	# Level II	6,16	7,12	7,16	6,11	-.493	.628	-.11
	# Level III	8,42	7,14	3,84	4,50	3.421	<0.01	.63
	# Level IV	6,00	5,92	6,95	8,92	-.522	.608	-.12

When looking at sublevels of abstraction, mother utterances regarding summarizing and integrating different activity elements (Level III A) were more prevalent during shared reading (M = 5.52, SD = 4.40) compared to prompting board activities (M = 0.37, SD = 1.01), $t(18)$ = 2.82, p = .01, r = .55. We found the same difference for child utterances (shared reading: M = 2.16 vs prompting boards: M = 0.42), $t(18)$ = 2.058, p = .054, r = .31 (although $p > .05$, the Benjamini-Hochberg procedure rendered this a significant effect). Furthermore, Level III C utterances (relating to life experiences) were more prevalent for children during

shared reading (M = 2.84, SD = 3.25) than during prompting board activities (M = 1.36, SD = 2.41), $t(18) = 2.16$, $p = .044$, $r = .45$. We additionally found Level III D utterances, regarding personal opinions, to be more frequent in child speech during shared reading (M =2.63, SD = 2.93) than during prompting board activities (M =1.32, SD = 1.69), $t(18) = -2.18$, $p = .042$, $r = -.46$. Overall more higher-level utterances occurred during shared reading, most noticeably on the sublevels of summarizing and integrating different activity elements, as these differences were significant for both mother and child speech.

Proportions of Mother and Child Speech

To establish whether the two activities differ in proportion of utterances made by the child versus utterances made by the mother (Research Question 3), we performed a Wilcoxon's signed rank test. We found a significant difference in the percentages of utterances made by children (compared to mothers). During both the prompting board and the shared reading activities, children generally talk less than their mothers do. However, during the prompting board activities, child utterances take up a significantly larger percentage of the conversation (Mdn = 39.18) compared to during shared reading (Mdn = 36.20), $z = -2.09$, $p = .036$, $r = -.34$.

Communicative Function

Comparison of the two activities revealed that about half of the mother and child utterances during shared reading were focused on story content (see Table 4.6). We found no significant differences between prompting boards and shared reading in the proportion of parent or child utterances across the communicative function categories (although $p < .05$ for the child's percentage of content related utterances, the Benjamini-Hochberg procedure rendered this a non-significant effect).

Levels of Abstraction

When looking more closely at the utterances focused on the content of the prompting boards and the stories, results show that mother and child utterances on level I constituted a greater part of the conversations during prompting board activities (see Table 4.7). Utterances on level III (e.g., summarizing, relating to the child's own life experiences and utterances regarding personal opinions), on the other hand, constituted a greater part of the conversations during shared reading. Furthermore, mother's use of Level IV utterances (e.g., inference making) constituted a greater part of the conversations during prompting boards (although $p > .05$, the Benjamini-Hochberg procedure rendered this a significant effect).

TABLE 4.6. Wilcoxon Results on Percentages of Utterances Across Communicative Functions

		Reading	Prompting Board				
		Median	**Median**	***T***	**Z-score**	***p***	***r***
Mother	% Content-related	51,02	55,45	51	-1,771	.08	-.29
	% Feedback	34,94	31,68	74	-0,845	.42	.14
	% Procedural	7,69	3,76	47	-1,932	.06	.31
	% Off-task	0,51	0,00	38	-0,524	.63	.08
Child	% Content-related	62,71	66,67	32	-2,330	.02	.38
	% Feedback	23,81	23,53	85	-0,022	1,00	.00
	% Procedural	4,76	0,00	27,5	-1,846	.06	.30
	% Off-task	0,00	0,00	8	-1,400	.16	.23

More specifically, mother's use of labeling (Level I A) utterances constituted a greater part of the conversations during prompting board activities (*Mdn* = 19.05) than during shared reading (*Mdn* = 5.36), z = -1.97, p = .049, r = -.32. This difference was also observed in child speech (shared reading: *Mdn* = 8.33 vs. prompting boards: *Mdn* = 33.33), z = -3.34, p = .000, r = -.54. Specifically for children, the share of Level I C utterances (noticing) was greater during the prompting board activities (*Mdn* = 7.14) compared to shared reading (*Mdn* = 5.00) z = -2.77, p = .004, r = -.45. For shared reading on the other hand, mother utterances on levels III A and D (e.g., summarizing and personal opinions) constituted a greater part of the conversations (*Mdn* = 8; *Mdn* = 8) compared to during prompting board activities (*Mdn* = 0; *Mdn* = 4.76), z = -2.92, p = .002, r = -.47 and z = -2.17, p = .03, r = -.35, respectively. These differences are also observed in child speech for Level III A (shared reading: *Mdn* = 3.23 vs. prompting boards: *Mdn* = 0), z = -2.31, p = .02, r = -.38, and for III D (shared reading: *Mdn* = 7.14 vs prompting boards: *Mdn* = 3.23), z = -2.19, p = .03, r = -.36.

Although the overall trend shows higher-level utterances to constitute a greater part of the conversation during shared reading, we also found that, on the highest level of abstraction (Level IV), mother utterances revolving around making inferences (Level IV B) constituted a greater part of the conversations during prompting boards (*Mdn* = 24.14) than during shared reading (*Mdn* = 10.53), z = -2.02, p = .043, r = -.33. This difference was not statistically significant for child speech, however.

TABLE 4.7. Wilcoxon Results on Percentages of Utterances Across Levels of Abstraction

		Shared Reading	Prompting Board				
		Median	Median	*T*	Z-score	*p*	*r*
Mother	% Level I	19,64	33,33	21	-2,978	.002	-.48
	% Level II	26,47	31,71	78	-0,684	.49	-.11
	% Level III	37,04	12,50	11	-3,380	<.001	-.55
	% Level IV	19,35	27,59	44	-1,807	.07	-.29
Child	% Level I	16,67	42,86	12	-3,340	<.001	-.54
	% Level II	19,15	26,04	55	-1,328	.18	-.22
	% Level III	38,30	9,68	11	-3,381	<.001	-.55
	% Level IV	21,43	19,05	79	-0,283	.78	-.16

DISCUSSION

The aim of this study was first of all to determine whether prompting boards succeed in eliciting abstract talk to a similar or possibly larger extent than shared reading does. Whereas shared reading interactions have been researched extensively so far, insight into parent-child interactions during prompting board-like activities is lacking. Our comparison of prompting boards and shared reading activities was based on the premise that both activities are very well suited for discussing symbolic representations, but, at the same time differ in their 'scriptedness.' This implies that prompting boards might elicit more content-related speech, which we additionally expected to be more abstract, compared to during shared reading. Results from the current study first of all show that both activities elicit mother and child utterances on all four levels of abstraction, ranging from labeling and describing scenes, to discussing personal opinions and inference making. The total number of mother and child utterances did not differ significantly between the two activities, possibly indicating that the content of the stories and prompting boards were equally interesting and cognitively demanding.

We found child utterances to overall constitute a significantly larger part of the conversation during prompting board activities than during shared reading. This finding is in line with our expectations and could be explained by differences in the nature of these activities. A parent taking charge of the shared reading activity by reading aloud the storyline is putting the child in a more passive position: the child can perceive his or her main contribution to the activity as listening to the parent. The fact that the parent is not reading during a

prompting board activity and consequently has less need to take up a dominant role in the conversation, leaves more opportunity for the child to engage and might make the child feel more invited to actively participate.

We also examined whether prompting boards would elicit more content-related utterances than shared reading. Contrary to our expectations based on the nature of both activities (see Introduction), we found no significant differences in the (absolute) number of utterances, nor in the percentage of utterances, across the distinguished communicative function categories during the two activities.

Furthermore, we hypothesized that prompting boards would elicit more abstract talk compared to shared reading activities. We found labeling utterances, on the lowest level of abstraction, to be more frequent for children during prompting board activities. Labeling utterances also constitute a greater part of child speech during prompting board activities. This latter finding is significant for mother speech as well. For children, we additionally found a greater proportion of noticing utterances during the prompting board activities. A possible explanation for this finding follows logically from the absence of storylines in the prompting board activities (see previously). This might make mothers and children feel the need to label objects depicted on the prompting board, because they are not explicated in a storyline, as is the case during shared reading. In addition, labeling and noticing utterances are also relatively easy for the child, which could serve as a motivator for children to keep contributing on this level.

In contrast, higher-level mother and child utterances were observed to be more frequent during shared reading activities, as compared to during prompting board activities. In particular, summarizing and integrating discourse elements occurred more frequently during shared reading. Other studies have also found more higher-level utterances such as these to be characteristic of interactions during shared reading, compared to more lower-level utterances during activities such as free play and play-doh modelling (Crain-Thoreson et al., 2001; Korat, 2009; Snow et al., 1976; Van Kleeck et al., 1997; Yont et al., 2003). More specifically, in line with our results, Sorsby and Martlew (1991) found more higher-level utterances during shared reading compared to play doh-modelling, particularly at the level of reordering perception (Level III). A likely explanation for this finding is that storybooks are more episodic in nature than prompting board activities and thus are probably more conducive to questions such as "Can you tell me what we just read about?". For children's speech, we additionally found utterances relating to life experiences as well as personal opinions to be more frequent during shared reading. Combined with our finding that

prompting boards elicit labeling utterances from children in particular, this finding might be explained by the fact that the nature of prompting boards particularly triggers labelling utterances on the part of the child, leaving less room for utterances relating to life experiences and personal opinions. In other words, children are primarily occupied with describing what they see. Regarding proportions of speech, both parent and child summarizing utterances and utterances involving personal opinions showed to constitute a greater part of the conversation during shared reading.

Interestingly, and in line with our expectations, reasoning about perception (in particular inference making)—the highest level of abstraction—constitutes a larger part of mother speech during prompting board activities. This finding could be explained by prompting boards in itself being more suitable for eliciting mother utterances on this particular level, because during shared reading many connections between story components (characters, actions) are made explicit in the storyline, whereas, by definition, such relations remain implicit in prompting boards. In other words, processing the contents of prompting boards requires explicating relationships between characters, and/or actions in addition to merely naming them. This is exactly what is coded on our highest level of abstraction.

Implications for Research

The current study was a first exploratory step towards discovering the effects of prompting boards on parent-child interactions, and sought to expand the existing body of work by comparing parent-child interactions during prompting boards with those during shared reading. Although we are not able to generalize our findings given our limited sample size, our results suggest that the use of prompting boards can be a fruitful method to elicit stimulating parent-child interactions. However, larger, quantitative studies are needed to validate the outcomes of the current study.

Previous research recognizes the role of SES in explaining variability in parent-child interaction quality (Hoff, 2003; Korat, Ron, & Klein, 2008; Mol, Bus, de Jong, & Smeets, 2008) and some studies additionally identified an interaction effect of SES and activity type (Dunn, Wooding, & Hermann, 1977; Hoff-Ginsberg, 1991; Snow et al., 1976). As our sample was limited and not equally distributed across SES-groups, we were not able to investigate this relationship. This is partly due to the fact that the intervention specifically targets low-SES groups, and thus low-SES parents were overrepresented in our sample. Although previous research has suggested shared reading diminishes class differences compared to more open-structured activities that focus on fine motor manipulation (Dunn et al., 1977;

Hoff-Ginsberg, 1991; Snow et al., 1976), the literature to date provides no insight into the relationship between SES and parent-child interactions during prompting board activities. This is an interesting relationship, as it could be hypothesized that (non-scripted) prompting boards are less constraining in structure compared to (scripted) shared reading, thereby leaving more to parents' imagination, which could be especially challenging for parents, and hence might augment SES differences. On the other hand, prompting boards' non-scripted nature might provide greater flexibility of interpretation and abstract conversations, leading to less prominent SES differences. As prompting boards are part of a number of Family Literacy Programs—which aim to promote children's literacy development, particularly in at-risk families—future research should examine the effects of prompting boards in light of SES-related differences in parent-child interactions.

Implications for Policy and Practice

Findings from this study suggest both prompting boards and shared reading are successful in eliciting more abstract utterances, even for a sample of parents that is not highly educated. For shared reading, these results are in line with previous research (Korat, 2009; Sorsby & Martlew, 1991; Yont et al., 2003). The two activities examined in the current study, differ in the type of out-of-context utterances they elicit most. Prompting boards elicited more mother utterances and additionally a greater proportion of mother utterances on the highest level of abstraction—revolving around making inferences. Previous research has highlighted the need to pay greater attention to abilities such as inferencing in current emergent literacy interventions (Van Kleeck, 2008). Our findings are thus promising, particularly since these abilities are crucial for later reading comprehension (Cain, Oakhill, Barnes, & Bryant, 2001). Especially for children lacking abilities to engage in inferencing the prompting board could be a fruitful method. During the effect study described in Chapter 3 on EEH (the program that forms the context of this study), the authors received occasional complaints from parents and teachers who were working with the program. They reported that it was challenging to engage their child in discussion around prompting board activities. However, given the findings we present in this paper, we argue that this should not be reason for program developers to shy away from using prompting boards in early interventions, as long as specific instructions are provided for parents that aim to elicit higher-level utterances. Although future research with larger samples is needed, this study shows that prompting boards can succeed in eliciting highly abstract speech.

In the context of reading, previous work has shown that the child's engagement in shared reading is a predictor for later language and literacy development (Brannon & Dauksas, 2012;

Crain-Thoreson & Dale, 1992; Mol et al., 2008). Following our finding that prompting boards succeed in eliciting a greater contribution to the conversation from the child compared to shared reading activities, the former could prove particularly stimulating.

Many questions remain unanswered, however. For example, does stimulation provided by parents during prompting boards on the highest level of abstraction in time lead to higher language and literacy outcomes for children? Given previous research on the relationship between the use of cognitively demanding, abstract talk during shared reading and children's literacy outcomes (Serpell et al., 2005; Sorsby & Martlew, 1991; Van Kleeck, 2008), this is a viable hypothesis worth further investigation. Are prompting boards equally successful in eliciting higher level utterances in low-SES groups compared to high-SES families? And, within the context of Family Literacy Programs: how can we best teach parents to engage in stimulating prompting board discussions with their child? What proportion of prompting board activities compared to other activities is advisable to use in a Family Literacy Program and for which target groups? Ethnic-minority parents, for example, might prefer prompting boards over shared reading activities in a second language. To answer these questions, further research is needed, using larger samples across multiple SES and language groups, and additionally taking into account child outcomes.

05

The role of activity type and socio-economic status in parent-child interactions and children's literacy skills

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ABSTRACT

Level of abstraction in parent-child interactions has been found to predict early literacy skills and later reading comprehension. Various conversational contexts elicit abstract speech to a different degree. Shared reading, a scripted activity, is reported to elicit most abstract speech, compared to other activities (e.g., toy play and recounting a family outing). Parental SES is another key predictor of abstract talk. Shared reading has been found to attenuate differences in abstract speech between SES-groups. In the current study, we compared non-scripted prompting boards to shared reading activities regarding abstraction of parent-child interactions. Although prompting boards are widely incorporated in pre- and primary school curricula, and in various Family Literacy Programs, knowledge about the language used in these activities is lacking. We observed 44 parent-child dyads (87% mothers, child M_{age}: 63 months) from various socio-economic backgrounds during prompting board and shared reading discussions. Prompting boards were found to elicit both more, and more highly abstract speech (particularly, inferencing) than shared reading, and children contributed more often to the conversation. Additionally, most speech on the lowest level of abstraction occurred during prompting boards (e.g., labeling and locating). Moreover, high-SES parents and children produced more highly abstract speech and less labeling and locating compared to low-SES dyads. Shared reading did not attenuate SES differences in abstract interactions. Finally, parents' abstract talk during prompting boards predicted children's literacy skills, whereas their abstract talk during shared reading did not. Implications for research and practice are discussed.

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, Hecht, & Lonigan, 2002; Duff, Reen, Plunkett, & Nation, 2015). Previous research has shown that differences in emergent literacy skills are influenced by both the quantity of home literacy activities (how often do parents engage in literacy-related activities with their children?) and the quality of these activities—in particular the quality of parent-child interactions (Hindman, Skibbe, & Foster, 2014; Huttenlocher, Waterfall, Vasilyeva, Vevea, & Hedges, 2010; Rowe, 2012). One quality aspect of parent-child interactions that affects children's literacy development is parents' use of abstract talk (Serpell, Baker, & Sonnenschein, 2005; Van Kleeck, 2008), also referred to as 'decontextualized talk' (Curenton, Craig, & Flanigan, 2008; Snow, 1983) and 'non-immediate talk' (Smith & Dickinson, 1994). Abstract talk (e.g., "What do you think is going to happen next?" or "Why does the owl look angry?"), as opposed to contextualized talk such as labeling, requires children to "move beyond the immediate conversational context to create and re-create events, analyze experiences, and share opinions and ideas" (Smith & Dickinson, 1994, p. 347). This act of 'distancing' (Blank & Solomon, 1968) is thought to stimulate children's ability to deal with abstract representations and this competence, in turn, is an important component of children's literacy development, because it aids later reading comprehension (Serpell et al., 2005; Van Kleeck, 2008).

Various studies have been conducted on how parents engage their children in abstract talk during different types of activities. Some of these studies show that shared book reading elicits more abstract talk than manipulative play such as object building and play-doh modeling (Hoff-Ginsberg, 1991; Sorsby & Martlew, 1991; Snow et al., 1976). This is explained by the fact that manipulative play focuses on physical action and thus provides fewer opportunities to talk about abstract representations (Snow & Ninio, 1986). Shared reading, on the other hand, requires little physical action and, consequently, parent and child can focus fully on discussing such representations. Shared reading was also compared to other content-focused activities. Korat (2009), for instance, compared parent-child interactions during a book reading activity and a photo-album activity—both characterized by a focus on symbolic representations—and compared maternal levels of 'teaching talk'. Three levels of talk were distinguished: 1) labeling or describing pictures/photos; 2) paraphrasing text and explaining words; and 3) use of distancing to enhance comprehension (e.g., relating to the child's own experience, making connections beyond the text). More abstract talk was

found during shared reading, although higher-educated mothers used distancing in the photo activity as well. The latter suggests that, at least for high-SES parents, abstract talk is not limited to text-based activities.

In a recent study (reported in Chapter 4), we examined parent-child interactions during an activity that might also elicit higher degrees of abstract talk, namely so-called 'prompting boards'. A prompting board is a complex picture around a certain theme, depicting a scenario (i.e., a picture that suggests a sequence of events; see Appendix C.1 for an example). Prompting boards are commonly incorporated into pre- and primary school curricula worldwide, and they are also used in various (Dutch) Family Literacy Programs. We compared parent-child interactions during prompting board activities to those during shared reading. We asked 19 mother-child dyads to carry out both activities, videotaped their interactions, and coded these for abstract talk, operationalized in terms of four levels of abstraction (Van Kleeck, Gillam, Hamilton, & McGrath, 1997; Van Kleeck, 2008). Results showed, for example, that prompting boards elicited a larger share of parent utterances on the highest level (making inferences) than shared reading.

In order to explain this difference, key characteristics of both activities need to be taken into account. The finding that prompting boards elicited a larger share of parent utterances on the highest level—inference making—can be attributed to the 'non-scriptedness' of this activity. The scenarios depicted in prompting boards are not supported by a storyline explicated in text. This makes it an open-ended activity: while in books many connections between story components (i.e., between characters and/or actions) are made explicit in the narrative, such relationships remain implicit in prompting boards. Consequently, processing the contents of prompting boards requires describing these relationships, for which abstract utterances are needed (e.g., inferring a cause-and-effect relationship). Prompting board activities thus more or less compel parents to engage in such abstract 'inferencing talk'.

In addition to key characteristics of the activity at hand, other important factors play a role in engaging in abstract talk, such as parental SES. Research has demonstrated that low-SES parents' interaction patterns are different from those of high-SES parents, where the latter more often use higher-level talk (Hoff, Laursen, & Tardif, 2002; Mol, Bus, de Jong, & Smeets, 2008; Korat, Ron, & Klein, 2008; Korat, 2009). Interestingly, some activities appear to reveal larger SES differences in abstract talk than others, implying an interaction effect of SES and activity type. In the past, several studies have shown that shared reading is less prone to SES effects than other, more open and less scripted activities such as play or mealtime conversations (Dunn, Wooding, & Hermann, 1977; Hoff-Ginsberg, 1991; Snow et al., 1976).

For example, Snow et al. (1976) found that during free play, academic and lower middle class mothers used more abstract speech than working class mothers, whereas these class differences did not occur during shared reading. One explanation for this interaction effect of SES and activity type is that low-SES parents are supported in realizing more abstract talk during shared reading as a result of the presence of textual information, thereby attenuating SES effects.

In summary, previous studies have shown that activities with a focus on symbolic content elicit abstract interactions. Although shared reading has been reported to trigger most abstract speech, other activities that focus on symbolic content (e.g., photo-album activities) also provide opportunities to engage in abstract talk. This type of talk is mostly realized by high-SES parents, although the size of SES differences might depend on the type of activity parents and children engage in: whereas some studies argue that shared reading is equally conducive to SES effects as other activities involving abstract representations (Mol et al., 2008), other studies find shared reading to attenuate SES-effects (Dunn et al., 1977; Hoff-Ginsberg, 1991; Snow et al., 1976). An activity that appears to be particularly suited to elicit abstract talk is a prompting board (De la Rie et al., 2016). It is unclear however, whether and to what extent this activity is prone to SES effects. It could be hypothesized that, because (non-scripted) prompting boards depend more on parents' ability to make inferences (De la Rie et al., 2016), this type of activity could be especially challenging for low-SES parents, and hence might augment SES differences.

Another unexplored question is how abstract talk during prompting boards relates to children's literacy and language skills. As suggested earlier, features of parent-child interactions during literacy activities, such as the use of abstract talk, are assumed to be indicators of the quality of the home literacy environment. Since this environment plays an important role in children's early literacy development (Scheele, Leseman, & Mayo, 2010; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart 2004), characteristics of these interactions are thought to be predictive of children's literacy outcomes. Previous studies have indeed suggested a positive relationship among the use of abstract talk during parent-child activities such as shared reading and literacy outcomes (Beals, 2001; Serpell et al., 2005; Snow, Dickinson, & Tabors, 2001; Sorsby & Martlew, 1991; Van Kleeck, 2008). Since prompting boards, like shared reading, appear to reveal differences between parents in the extent to which they stimulate their children to engage in higher-level interactions (see Chapter 4), it can be hypothesized that they reflect meaningful differences in children's home literacy environments. Consequently, it can be expected that they are associated with differences in children's literacy outcomes.

Research Questions

Against this background, the following research questions will be addressed:

1. Are there differences in the use of abstract talk in parent-child interactions during prompting board versus shared reading activities?
2. What is the effect of SES on the use of abstract talk in parent-child interactions?
3. Is the effect of SES on the use of abstract talk moderated by activity type?
4. Is parents' use of abstract talk during prompting board and shared reading activities associated with children's literacy and language skills?

METHOD

Participants

We observed 44 dyads participating in an intervention study on a Dutch Family Literacy Program called Early Education at Home (Dutch Youth Institute, 2012) during the school year of 2014-2015. At the time of data collection, participating children were in 9 different kindergarten classes, located within 7 primary schools. The observations analyzed in this study are part of the pre-test data (children's literacy and language scores) and data gathered closely after the start of the intervention period (parent-child observations). Parents and children (n = 119) were asked to participate in observations, of which 72 parents agreed. Of these 72 observations, only video-recorded observations were selected for our study (n = 63), as transcripts of literal parent-child interactions were required. An additional 19 dyads were removed for one of the following reasons: parents having read the story to their child or discussed the prompting board previous to the observation (n = 10), absence of child speech during either activity (n = 1), absence of content-related speech (n = 2), use of a language other than Dutch (n = 5), and missing data on SES (n = *1)*. This left us with a total sample of 44 parents and children, characteristics of whom are presented in Table 5.1.

Procedure

Parents were initially approached by their child's teacher or by the first author. Parents who consented to participate were asked to execute two activities with their child: a shared reading activity and a prompting board activity. Observations were conducted during the first half of the school year 2014-2015, in late autumn and winter (October-December). Interactions were recorded on video and participants were asked to behave as they normally would, and encouraged to ignore the fact that they were being recorded. Most

observations took place at school, whereas a few parents preferred to be observed in their home. The observers interacted minimally with the participants once the videotaping commenced. Parent-child interactions during shared reading lasted 9 minutes on average (range 3-24), including parents' literal reading of the storyline. Prompting board activities lasted 7 minutes (range 2-15) on average.

The first author was aided in conducting the observations by 10 research assistants, who were bachelor or master students in social sciences, mostly pedagogy. The assistants were trained for the practicalities of data collection (e.g., instructing parents on the two tasks, use of the camera) during a three-hour session.

TABLE 5.1. Characteristics of Participating Parents and Children

Parent characteristics	
Mothers (vs fathers)	87%
Education	
Secondary school	18%
Senior vocational education	43%
College or university degree	39%
Born outside of the Netherlands	27%
Speaks language other than Dutch [a]	40%
More proficient in other language than Dutch	24%
Equally proficient in Dutch and other language	12%
More proficient in Dutch	64%
Child characteristics	
Girls (vs boys)	49%
Age mean (months)	63
Age range (months)	57-70

Note. [a] The difference with 27% of parents born outside of the Netherlands can be explained by second generation immigrants also speaking a language other than Dutch.

Instruments

Activities

During each observation, dyads were provided with an illustrated story and a prompting board (see Appendix C.1). The story was written for this age group in the context of the previously mentioned Family Literacy Program by a well-known children's literature

writer. The prompting board was selected from a 'Wimmelbook' by Anne Suess (2014). A 'Wimmelbook' is a prompting board book, which is a type of children's book that consists of a series of individual, complex pictures (see Rémi, 2011).

Coding Scheme

To gain insight into the extent to which interactions are abstract, parent-child interactions during prompting boards and shared reading were transcribed and coded with the aid of a coding scheme (see Appendix C.2). This scheme was adapted from the schemes used by Van Kleeck et al. (1997) and Sorsby and Martlew (1991), which are, in turn, based on four levels of abstraction distinguished by Blank, Rose, and Berlin (1978a, 1978b). These four levels which will be explained in the next section.

Coding was done using both the transcript and the video recordings. Utterances in the transcripts were distinguished aided by the 'unit of meaning' concept, a unit that represents a thematically consistent verbalization of a single speech act (De Backer, Van Keer, & Valcke, 2012). When an utterance or a series of utterances could be coded with one single code than this series of utterances was seen as one unit of meaning. For example "This is a squirrel, it has a brown color and a fluffy tail" consists of two levels of abstraction, and is therefore coded as two utterances: "This is a squirrel" is coded as labeling (I A), whereas by "It has a brown color and a fluffy tail" is coded as a comment on a specific aspect of a character (II A). For the shared reading activity, only extra-textual utterances (beyond literal reading of the storyline) were transcribed and coded (Hammett, Van Kleeck, & Huberty, 2003; Muhinyi & Hesketh, 2017; Sorsby & Martlew, 1991). All utterances related to the storybook/prompting board were coded according to their level of abstraction. Other utterances (regarding the procedure of the activity, or unrelated to the activity) were excluded from our analyses.

We distinguished four levels of abstraction (Blank et al., 1978a, 1978b; Van Kleeck et al., 1997; Sorsby & Martlew, 1991). Level I, 'matching perception', is the lowest level of abstraction and includes speech about the directly visible context, such as labeling, locating, and noticing directly visible and concrete items (e.g., objects or characters pictured in the storybook or prompting board). Level II, 'selective analysis and integration of perception', includes questions or comments on specific aspects of objects and characters, or events and actions (e.g., "How many mice do you see?" or "The owl is wearing a hat"). Utterances at Level III ('reorder/infer about perception') move beyond the immediate context and involve summarizing parts of the story or integrating images on the prompting board, defining words encountered in the activity, making comparisons to the child's life experiences, and

discussing personal opinions. Level IV speech ('reasoning about perception') is defined as the highest level of abstraction, and involves making predictions and drawing conclusions. Both parent and child content-related utterances were coded for level of abstraction.

Transcription and Coding

Two of the ten assistants were trained to transcribe the videos of the verbal interactions, including task-related non-verbal behaviors (e.g., pointing, nodding). Two activities (one prompting board and one shared reading activity) were transcribed by the first author and both assistants. Results were compared and assistants revised their versions of the transcript based on feedback given by the first author. Thereafter, the assistants were trained to use the coding scheme. As part of the training, the two assistants transcribed and coded five percent of the videos, previously transcribed and coded by the first author. The codes were discussed in an iterative process over a total of five sessions, lasting two hours on average. During each session, one or two transcripts were discussed (depending on their length), codes were compared, and disagreements were resolved.

To assess inter-rater reliability between the two coders, intra-class correlations (ICC's) were calculated for 18% of the transcripts (see Table 5.2). Results indicated good agreement among coders (.87).

TABLE 5.2. ICC's for Levels of Abstraction in Parent and Child Utterances by Two Coders

	ICC
Level I	.86
Level II	.89
Level III	.95
Level IV	.80
Average across levels	.87

Literacy and Language Skills

Information on children's emergent literacy skills was obtained by teacher ratings via a questionnaire. The questionnaire was based on previous work (Van Steensel, 2006) and consists of 15 items referring to three dimensions of emergent literacy: oral language, phonological awareness, and print knowledge. Cronbach's alpha for this questionnaire was .97, which indicated good reliability.

We used a standardized language test (Cito, 2011) to measure children's language abilities, that is, their receptive vocabulary knowledge, critical listening skills, phonemic and rhyme awareness, print knowledge, and auditory synthesis abilities. Cronbach's alpha for this test was reported at .87 (Lansink & Hemker, 2010), indicating good reliability. Additional information on children's receptive vocabulary was obtained from a curriculum-based picture vocabulary test (similar in design to the Peabody Picture Vocabulary Test), developed for this study by the first and third author. We incorporated 43 words from various lesson themes offered to children during the second kindergarten year. Cronbach's alpha for this test was .74, indicating sufficient reliability.

Socio-economic Status

SES was operationalized as parental educational level. Via a questionnaire, we asked parents to report their educational attainments. We divided the participating dyads in three categories (see Table 5.1): lower (secondary education; up to 16 years of age), middle (senior vocational education; up to 18 years of age), and higher (college or university degree).

Analyses

Our data are hierarchical. In the case of Research Questions 1-3, this hierarchy involves activities (i.e., shared reading/prompting board) nested within dyad-members (i.e., parent/child), and dyad-members nested within dyads. Because of this hierarchical structure, we first of all tested for significant variance on the upper levels, to determine whether or not we should employ multi-level analyses. For Research Question 1-3, exploration of Intercept-Only models, using the program MLwiN 2.36 (Charlton, Rasbash, Browne, Healy, & Cameron, 2017) showed no significant variance on the Dyad-member-level. This indicates that parents and children were very similar regarding the level of abstraction in their speech. Similar findings have been reported in previous studies (e.g., Luo & Tamis-LeMonda, 2017). Variance on the Dyad-level was significant for three of the four outcome variables (Level II, III, and IV). For these three variables, we proceeded with a two-level model, consisting of Activities (Level 1) and Dyads (Level 2). For the outcome variable Level I we conducted uni-level regression analyses in SPSS (Version 23.0, IBM Corp.), as for this variable there was no significant variance on the Dyad-level.

To answer Research Questions 1-3 we took the following steps. We first added the Level 1 variable Total number of utterances to the intercept-only model, because this variable might act as a confound in our comparison of activity types (for similar procedures, see Sorsby & Martlew, 1991; Yont, Snow, & Vernon-Feagans, 2003). Since

we did not code literal reading of the text, but focused on extra-textual utterances, we expected to find fewer utterances in shared reading activities than in prompting board activities, where there is no text (this was corroborated by our results, see Table 5.3).

To examine differences between shared reading and prompting boards in the use of abstract talk we then entered the Level 1 predictor Activity type (Research Question 1). In a following model, we added SES (transformed into two dummy variables: Middle SES and Higher-SES) as a Level 2 predictor (Research Question 2). In order to answer Research Question 3, we tested whether the effect of activity type was characterized by random slopes. Finally, cross-level interaction terms (Middle SES × Activity type, and Higher SES × Activity type) were added to examine the hypothesized interaction effect of Activity type × SES.

Although the data used to answer Research Question 4 are, in principle, hierarchical as well (children in classes in schools), we proceeded with uni-level hierarchical regression analyses (SPSS Version 23.0, IBM Corp.), because of the small sample size on the class-level ($n = 9$) and school-level ($n = 7$). In fact, preliminary analyses showed no significant random variance at either of these two levels. In order to compare the unique contributions of both activities to explaining differences in children's language and literacy skills, separate analyses were conducted for prompting boards and shared reading. The share of abstract talk was determined by computing the percentage of 'decontextualized talk', that is, by computing what the percentage of Level III and Level IV utterances was relative to the total number of utterances by parents. We focused on parent utterances (not on child utterances) because we were interested in the relationship between parents' contributions during prompting boards and shared reading and child outcomes. As child age was a significant predictor of literacy and language skills, we included this variable as a covariate in the analyses concerning Research Question 4.

RESULTS

Descriptive Statistics

The descriptive statistics for parent and child utterances during prompting boards and shared reading are presented in Table 5.3. First of all, as expected, prompting boards elicited a larger total number of (content-related) utterances, compared to shared reading activities. Furthermore, prompting boards triggered a larger contribution of the child. Both activities

elicited utterances on all distinguished levels of abstraction, and number of utterances varied greatly among dyads (as reflected in the large standard deviations). Children's scores on emergent literacy, language and receptive vocabulary measures, are presented in Table 5.4.

TABLE 5.3. Mean Numbers and Percentages of Utterances Across Levels of Abstraction

	Prompting boards ***M (SD)***	**Shared reading** ***M (SD)***	**Prompting boards** ***M %***	**Shared reading** ***M %***
Total number of utterances	93.00 (42.05)	60.18 (41.80)		
Number of utterances by parent	49.93 (22.96)	34.73 (25.84)		
Number of utterances by child	43.07 (21.58)	25.44 (17.98)		
% Utterances by child			46.36	42.02
Parent utterances				
Level I	12.60 (7.66)	3.67 (4.00)	25.42	12.13
Level II	14.29 (8.90)	12.89 (8.96)	29.04	43.08
Level III	14.16 (9.38)	12.87 (13.69)	27.27	31.49
Level IV	8.89 (6.6)	5.31 (6.90)	18.27	13.30
Child utterances				
Level I	12.67 (7.99)	2.80 (3.27)	30.98	13.41
Level II	13.02 (8.52)	8.00 (5.40)	29.52	36.54
Level III	9.40 (6.77)	10.64 (10.96)	21.38	36.85
Level IV	7.98 (6.69)	4.00 (4.81)	18.12	13.20

TABLE 5.4. Possible Scores, Mean Scores and Standard Deviations for Child Outcomes

Measures	**Possible scores**	***M (SD)***
1. Literacy	1-5	2.98 (.81)
2. Language	0-108	54.32 (11.04)
3. Vocabulary	0-43	31.84 (4.03)

Abstract Talk During Prompting Boards and Shared Reading

Regarding our first research question, we found that activity type significantly predicted the amount of talk on all distinguished levels, while controlling for the total number of utterances. More specifically, we observed that parents and children produced a larger

share of talk on Level I and Level IV during prompting board discussions than during shared reading (see Model 2 in Table 5.5 & 5.8). In other words, during prompting board activities relatively more speech was dedicated to labeling, locating, and noticing objects, and to inferencing (drawing conclusions and making predictions). During shared reading activities, a significantly larger share of parent and child speech was on Level II and Level III (see Model 2 in Table 5.6 & 5.7). The former level entails utterances that focus on specific aspects of objects and characters, or events and actions, while the latter includes summarizing/ integrating discourse elements, defining words, making comparisons to the child's life experiences, and discussing opinions. Activity type explained 27%, 5%, 21%, and 9% of the variance in Level I, II, III and IV utterances, respectively.

The Role of SES

In answering our second research question, concerning the effect of SES on abstract speech, we found that higher-SES parents and children produced relatively less talk on Level I, and more on Level IV, compared to lower-SES parents and children. SES explained 4% of the variance in Level I utterances, and 15% of the variance in Level IV utterances. Our third research question involved the possible moderating effect of activity type on the relationship between SES and the level of abstraction in parent child-interactions. The analysis of Level I utterances, which was conducted uni-level, showed no interaction effect of activity type and SES (Model 4 in Table 5.5), implying that activity type did not moderate the SES effect on the share of Level I utterances. For Level II, III and IV utterances, which were analyzed multi-level, we first tested whether the effect of activity type was characterized by significant random slope variance. This proved to be the case for all three outcome measures, which means that the effect of activity type varied significantly across dyads. However, adding the SES × Activity type interaction terms did not improve model fit for any of the three measures, implying that the effect of SES was not moderated by activity type (see Models 4 and 5 in Tables 5.6-5.8).

TABLE 5.5. Multiple-regression Analyses Predicting Parent and Child Utterances on Level I

	0 ***B (SE)***	**1** ***B (SE)***	**2** ***B (SE)***	**3** ***B (SE)***	**4** ***B (SE)***
Intercept	7.875*** (0.583)	7.875*** (0.416)	4.735*** (0.529)	5.748*** (0.960)	6.566*** (1.209)
Total utterances (gm)		0.242*** (0.019)	0.184*** (0.018)	0.192*** (0.018)	0.195*** (0.018)
Activity type (prompting board=1)			6.279*** (0.783)	6.114*** (0.772)	4.525 (1.663)
Middle SES				-0.236 (0.998)	-0.948 (1.382)
Higher SES				-2.143* (1.030)	-3.413* (1.439)
Middle SES × Activity type					1.375 (1.947)
Higher SES × Activity type					2.475 (1.981)
ΔR^2		0.489***	0.268***	0.04*	--

Note. gm = grand mean centered. N = 176. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 5.6. Multi-level Regression Analyses Predicting Parent and Child Utterances on Level II

	0 ***B (SE)***	**1** ***B (SE)***	**2** ***B (SE)***	**3** ***B (SE)***	**4** ***B (SE)***	**5** ***B (SE)***
Fixed part						
Intercept	11.898*** (0.719)	11.898*** (0.580)	12.777*** (0.722)	14.886*** (1.477)	14.945*** (1.470)	15.379*** (1.667)
Total utterances (gm)		0.271*** (0.019)	0.296*** (0.022)	.302*** (0.022)	0.299*** (0.023)	0.297*** (0.023)
Activity type (prompting board=1)			-1.758* (0.810)	-1.873* (0.810)	-1.818 (1.036)	-3.121 (1.918)
Middle SES				-2.105 (1.647)	-2.282 (1.621)	-3.234 (1.991)
Higher SES				-2.957 (1.688)	-2.985 (1.669)	-3.27 (2.07)
Middle SES × Activity type						2.166 (2.626)
Higher SES × Activity type						0.729 (2.672)
Random part						
Activities	54.538 (6.713)	23.061 (2.840)	21.850 (2.691)	21.743 (2.680)	13.024 (1.964)	13.057 (1.969)
Dyads	9.111 (5.132)	9.030 (3.228)	10.249 (3.414)	9.464 (3.233)	14.241 (4.528)	13.968 (4.475
Random slope Activity type					26.306*** (8.615)	25.608*** (8.477)
Deviance	1225.789	1093.250	1088.799	1085.788	1065.348	1064.515
Reference model		0	1	2	3	4
Fit improvement		$\chi^2 = 132.539$ df = 1 p < .001	$\chi^2 = 4.451$ df = 1 p < .05	$\chi^2 = 3.011$ df = 2 p = n.s.	$\chi^2 =20.440$ df = 2 p < .001	$\chi^2 = 0.833$ df = 2 p = n.s.
ΔR^2 Level 1		0.577***	0.05*	--	0.401***	--
ΔR^2 Level 2		0.009***	--	--	--	--

Note. gm = grand mean centered. N Activities = 176; N Dyad-members = 88; N Dyads= 44. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 5.7. Multi-level Regression Analyses Predicting Parent and Child Utterances on Level III

	0 ***B (SE)***	**1** ***B (SE)***	**2** ***B (SE)***	**3** ***B (SE)***	**4** ***B (SE)***	**5** ***B (SE)***
Fixed part						
Intercept	11.324*** (1.068)	11.324*** (1.584)	14.440*** (0.728)	14.047*** (1.423)	13.572*** (1.554)	11.154*** (2.177)
Total utterances (gm)		0.311*** (0.023)	.377*** (0.024)	0.374*** (0.024)	0.333*** (0.024)	0.332*** (0.024)
Activity type (prompting board=1)			-6.233*** (0.965)	-6.174*** (0.969)	-5.414*** (1.339)	-1.323 (2.911)
Middle SES				-0.155 (1.534)	-0.034 (1.552)	2.393 (2.539)
Higher SES				1.116 (1.578)	1.227 (1.589)	4.735 (2.615)
Middle SES × Activity type						-4.099 (3.435)
Higher SES × Activity type						-5.933 (3.495)
Random part						
Activities	64.509 (7.941)	41.188 (5.071)	32.471 (3.997)	32.437 (3.993)	13.423 (2.024)	13.406 (2.024)
Dyads	34.509 (10.876)	4.687 (2.28)	4.980 (2.965)	4.675 (2.903)	30.713 (8.040)	29.371 (7.721)
Random slope Activity type					57.120*** (15.174)	52.863*** (14.257)
Deviance	1282.748	1170.365	1133.055	1131.854	1089.384	1086.589
Reference model		0	1	2	3	4
Fit improvement		$\chi^2 = 112.383$ df = 1 p < .001	$\chi^2 = 37.310$ df = 1 p < .001	$\chi^2 = 1.201$ df = 2 p = n.s.	$\chi^2 = 42.470$ df = 2 p < .001	$\chi^2 = 2.795$ df = 2 p = n.s.
ΔR^2 Level 1		0.361	0.212	--	0.586	--
ΔR^2 Level 2		0.864	--	--	--	--

Note. gm = grand mean centered. N Activities = 176; N Dyad-members = 88; N Dyads= 44. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 5.8. Multi-level Regression Analyses Predicting Parent and Child Utterances on Level IV

	0 ***B (SE)***	**1** ***B (SE)***	**2** ***B (SE)***	**3** ***B (SE)***	**4** ***B (SE)***	**5** ***B (SE)***
Fixed part						
Intercept	6.341*** (0.731)	6.341*** (0.562)	5.412*** (.641)	2.750* (1.328)	3.405** (1.164)	3.650** (1.189)
Total utterances (gm)		0.164*** (0.014)	0.135*** (.016)	0.131*** (0.016)	0.142*** (0.014)	0.143*** (0.014)
Activity type (prompting board=1)			1.858*** (0.553)	1.940** (0.553)	1.739* (0.776)	0.413 (1.77)
Middle SES				2.500 (1.523)	2.103 (1.345)	1.958 (1.382)
Higher SES				3.990** (1.557)	2.997* (1.385)	2.564 (1.426)
Middle SES × Activity type						0.792 (2.010)
Higher SES × Activity type						2.470 (2.045)
Random part						
Activities	19.716 (2.427)	10.791 (1.328)	9.775 (1.205)	9.746 (1.200)	2.962 (0.447)	2.963 (0.447)
Dyads	18.554 (5.043)	11.187 (2.977)	12.248 (3.135)	10.435 (2.758)	9.241 (2.297)	9.190 (2.285)
Random slope Activity type					20.619*** (5.049)	19.724*** (4.63)
Deviance	1092.888	990.205	979.647	973.429	896.801	895.014
Reference model		0	1	2	3	4
Fit improvement		χ^2 = 102.683 df = 1 p < .001	χ^2 = 10.558 df = 1 p < .001	χ^2 = 6.218 df = 2 p < .05	χ^2 =76.628 df = 2 p < .001	χ^2 = 1.787 df = 2 p = n.s.
ΔR^2 Level 1		0.453***	0.094***	0.003*	0.696***	--
ΔR^2 Level 2		0.397***	--	0.148*	0.114***	--

Note. gm = grand mean centered. N Activities = 176; N Dyad-members = 88; N Dyads= 44. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

Abstract Speech and Children's Literacy and Language Skills

In light of our fourth research question, analyses revealed that the share of decontextualized language (Level III & Level IV combined) used by parents during a prompting board discussion significantly related to children's literacy and vocabulary scores, after controlling for the child's age (see Table 5.9 & 5.10). Decontextualized language used by parents during a prompting board explained 13% of the total variance in both children's literacy and vocabulary scores. During shared reading, on the other hand, the percentage of decontextualized language by parents was not significantly associated with children's literacy and vocabulary scores. Language scores were not related to the percentage of decontextualized language by parents during either activity.

TABLE 5.9. Multiple-regression Analyses Predicting Children's Literacy and Language Skills from Parents' Abstract Talk During Prompting Boards

	Literacy				Language				Vocabulary			
	0		1		0		1		0		1	
Model	***B (SE)***	***β***	***B (SE)***	***β***	***B (SE)***	***β***	***B (SE)***	***β***	***B (SE)***	***β***	***B (SE)***	***β***
Intercept	-3.950 (2.247)		-4.313* (2.080)		-18.860 (32.362)		-20.180 (32.791)		-0.567 (11.232)		-2.360 (10.421)	
Child age	0.111** (0.035)	.469**	0.103** (0.033)	0.434**	1.188* (0.511)	0.370*	1.163* (0.519)	0.362*	0.521** (.177)	0.445**	0.481** (.165)	0.410**
% decontext. talk parent PB			0.018* (0.007)	0.367*			0.060 (0.110)	0.088			0.091* (.035)	0.368*
R^2		.220**		0.353**		0.137*		0.145		0.198**		0.332*
ΔR^2				0.135*				0.008				0.134*

Note. decontext. = decontextualized. PB = prompting board. N = 44. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 5.10. Multiple-regression Analyses Predicting Children's Literacy and Language Skills from Parents' Abstract Talk During Shared Reading

	Literacy				Language				Vocabulary			
	0		1		0		1		0		1	
Model	***B (SE)***	***β***	***B (SE)***	***β***	***B (SE)***	***β***	***B (SE)***	***β***	***B (SE)***	***β***	***B (SE)***	***β***
Intercept	-3.950 (2.247)		-3.943 (2.279)		-18.860 (32.362)		-18.430 (32.767)		-0.567 (11.232)		-0.537 (11.397)	
Child age	0.111** (0.035)	0.469**	0.111** (0.036)	.466**	1.188* (0.511)	0.370*	1.160* (0.521)	0.361*	0.521** (0.177)	0.445**	0.519** (0.181)	0.443**
% decontext. talk parent SR			0.001 (0.004)	0.023			0.028 (0.063)	0.072			0.003 (0.02)	0.018
R^2		0.220**		0.220		0.137*		0.142		0.198**		0.198

Note. decontext. = decontextualized. SR = shared reading. N = 44. * $p < .05$; ** $p < .01$; *** $p < .001$.

DISCUSSION

The types of interactions parents and children engage in during literacy activities reflect differences in children's home literacy environments and are thus assumed to affect children's literacy development (Beals, 2001; Serpell et al., 2005; Snow et al., 2001; Van Kleeck, 2008). The nature of these interactions has been shown to vary across activity type (Crain-Thoreson, Dahlin, & Powell, 2001; Korat, 2009; Snow & Ninio, 1986) and is associated with demographic variables such as socio-economic status (Hoff et al., 2002; Baker, Mackler, Sonnenschein, & Serpell, 2001; Mol et al., 2008). The current study examined the effects of activity type and SES on the use of abstract talk in parent-child interactions. More specifically, we compared a scripted activity (shared reading) to a non-scripted activity (a prompting board), because we assumed the degree of scriptedness would influence the extent to which abstract interactions are realized. Moreover, we hypothesized an interaction effect of SES and activity type. We additionally examined the relationships between abstract talk by parents during both activities and children's literacy and language skills.

Regarding our first research question we found that activity type was associated with speech on all four levels of abstraction distinguished in this study. During prompting board discussions, parents and children produced a larger share of utterances both on the lowest level of abstraction (labeling, noticing, and locating) and on the highest level (inferencing). Shared reading interactions, conversely, were characterized by more talk on the intermediate levels, which involved focusing on specific aspects of objects and characters, or events and actions. Furthermore, summarizing/integrating discourse elements, defining words encountered in the activity, making comparisons to the child's life experiences, and discussing personal opinions were more prevalent during shared reading. These differences were also found in our exploratory study comparing shared reading and prompting board interactions (De la Rie et al., 2016; see Chapter 4).

We believe that these outcomes can be explained by differences in the scriptedness of the two activities. First, the finding that prompting boards elicited more speech on the lowest level of abstraction follows logically from the absence of written text in prompting board activities. It is likely that parents and children feel the need to label objects depicted on the prompting board, because they are not addressed in a narrative, as is the case during shared reading. Second, the finding that prompting boards elicited more inferencing might also be explained by the absence of a script. Whereas during shared reading many connections between story components are made explicit in the written text, such relations remain

implicit in prompting boards. In other words, processing the contents of a prompting board requires explicating relationships between characters, and/or actions (i.e., inference making) in addition to merely describing them.

Additionally, we found that children contributed to the discussion more often during prompting boards than during shared reading. This is in line with findings from our exploratory study (De la Rie et al., 2016; Chapter 4) and can be explained by the fact that reading aloud naturally places parents in charge of the activity, thereby putting the child in a more passive position: children can perceive their main contribution to the activity as listening to the parent. The fact that the parent is not reading during a prompting board activity and consequently has less need to take up a dominant role in the conversation leaves more opportunity for the child to engage and might make the child feel more invited to actively participate. This is an interesting finding, as previous studies have underlined the importance of children's active participation in language learning situations, for developing their language skills (Huebner & Meltzoff, 2005; Mol & Neuman, 2014; Swain, 2000). Moreover, young children's use of abstract language has been found to predict their academic language proficiency, even into mid-adolescence (Uccelli et al., 2018). Future research could further explore the possibilities of prompting boards in stimulating children's active participation in interactions.

Shared reading activities elicited a larger share of utterances on the second level of abstraction: describing specific aspects of objects and characters, and events and actions. This might be attributed to the fact that naming characters was coded on this level. While character names were provided in the shared reading activity, they were not provided in the prompting board activity. Additionally, specific characteristics of the story might have played a role. In the narrative, a teacher asks her class a question ("Do you know what a squirrel looks like?"). Many parents, in turn, asked their child to answer this question, requiring utterances on the second level of abstraction. We also found shared reading to elicit a larger share of utterances regarding summarizing/integrating discourse elements, opinions and connections to the child's own experiences. This finding corresponds with the outcomes of an earlier exploratory study (De la Rie et al., 2016; Chapter 4). The fact that storybooks are more episodic in nature than prompting board activities and thus are probably more conducive to remarks and questions such as "OK, so frog cannot find his friends anymore" or "Can you tell me what we just read about?", provides a likely explanation for this finding.

Regarding our second research question, concerning the effect of SES on abstract talk, we found that higher-SES parents and children produced a larger share of utterances on the

highest level of abstraction, and a smaller share on the lowest level, compared to lower-SES parents and children. This relationship between parental SES and abstract talk by parents has been found in previous studies (Hoff et al., 2002; Korat et al., 2008). Our analyses revealed no significant interaction effect of SES and activity type, suggesting that SES differences were the same across both activities. However, we did find that the effect of activity type was characterized by random slope variance, indicating that this effect varied across dyads. Within the current study, we were not able to identify a source for this random slope variance, implying that there are other variables than SES that might explain the varying effect of activity type on abstraction of interactions. Future research could examine which factors cause this effect. Possibly, parental beliefs regarding the type of activities that best stimulate their child's development are of influence (DeBaryshe et al., 2000; Weigel, Martin & Bennett, 2006). Hoff-Ginsberg (1991) points out that child rearing attitudes and goals have been suggested to contribute to class differences found in parent-child interactions. Examining factors such as these can provide relevant information for interventionists seeking to stimulate abstract speech in parent-child interactions, as identifying what types of activities work for different subgroups of parents might help make interventions more tailor-made, and thus, more effective.

The outcome that abstract talk by parents during prompting board activities predicts children's literacy scores, while abstract talk during shared reading does not, contradicts some previous studies, that found shared reading interactions to positively predict children's literacy skills (Beals, 2001; Serpell et al., 2005; Van Kleeck, 2008). For example, Bracken and Fischel (2008) found parent–child reading interactions to be a small yet significant predictor of children's receptive vocabulary, story and print concepts, and general emergent literacy skills. However, our findings are more in line with results presented by Neuman (1996) and Anderson, Anderson, Lynch, Shapiro, and Eun Kim (2012). Neuman (1996) questioned the dominant perspective that only certain types of interactions in shared reading stimulate children's language development, by suggesting that simply reading the text is beneficial to children, irrespective of extra-textual interactions. Work by Anderson et al. (2012) provided support for this suggestion, as the authors found no relations between types of questions asked during shared reading and children's early literacy skills.

Following Neuman (1996) and Anderson et al. (2012), it might well be that the *frequency* of shared reading is more important for children's literacy and language development than the *quality* of extra-textual utterances, because the written text itself provides sufficient cognitive stimulation. In the case of prompting board activities, we argue that the nature

of parental utterances—inferencing in particular—significantly relates to literacy and vocabulary skills, because they reflect the quality of support that parents give to their child. Realizing abstract speech during prompting board discussions implies that the parent is sensitive and responsive to the child, more so than during shared reading activities. This is because inferencing utterances are inherently important during prompting boards, as there is no storyline in which relationships between objects or events are explicated. In shared reading, abstract speech does not necessarily imply that parents are sensitive and responsive: it might be that they merely expand upon the storyline that is provided.

Limitations

Several limitations to this study are worthy of note. First of all, because of our limited sample size, our analyses lacked statistical power to detect small effects. For example, it is possible that the random effect of activity type on abstract speech is in fact (partly) explained by parental SES, but that this is a small effect which can only be detected using a larger sample. Furthermore, the range of educational levels was limited, as our sample did not include parents without any formal education or parents that had only attended primary school. We therefore recommend to replicate this study, using a larger sample and including parents from a wider range of educational backgrounds. Second, our study includes only one measurement of parent-child interactions. Multiple measurements are preferable as these would have likely provided a more reliable picture of interactions as they occur naturally in the home. Finally, we did not code interactions for contingency between parent and child utterances. In other words, the extent to which parental utterances were timely and functional for children was not taken into account in the current study. For example, when the child sees a picture of a hedgehog and does not know the corresponding label, a labeling utterance by the parent, although of a low level of abstraction, is likely beneficial for the child's understanding. In contrast, when the child is highly engaged in a story, a question about the child's own experiences can be distracting rather than stimulating. It would be interesting to code interactions for contingency during both activities, and analyze its influence on children's literacy development.

Implications for Policy and Practice

Prompting boards were found to elicit more abstract speech from both higher- and lower-SES parents and children compared to shared reading activities. Abstract speech has been found to predict inferencing abilities in children which, in turn, predict later reading comprehension (Van Kleeck, 2008). Moreover, children contributed more to the conversation during these activities, which might positively influence the child's motivation

to engage in literacy-related activities. Furthermore, previous studies have underlined the importance of children's active participation in language use situations for the development of their language skills (Huebner & Meltzoff, 2005; Mol & Neuman, 2014; Swain, 2000; Uccelli et al., 2018). However, the potential for prompting boards to stimulate children's language development might partly depend on the type of interactions that parents realize, as more decontextualized talk during these activities was associated with better skills in children. The extent to which parents are able to realize decontextualized talk is, in turn, (partly) dependent on their SES. Generally, low-SES parents use less decontextualized talk. In the context of Family Literacy Programs, this means that, when including prompting boards as stimulating parent-child activities, lower-SES parents should be supported in realizing decontextualized talk (Korat et al., 2008; Mol et al., 2008; Sonnenschein & Munsterman, 2002). A possibly beneficial approach in this respect, is the use of real-time online support (Takacs, Swart, & Bus, 2015; Teepe, 2018).

In conclusion, prompting boards seem promising for interventions aiming to improve children's literacy development. However, future research is needed to gain insight into possible causality of the relationship that was found in the current study between abstract talk during prompting boards and children's literacy skills. It could be that abstract prompting board discussions are beneficial for children's literacy skills. However, abstract talk during prompting boards could also reflect differences among parents on other variables that are actually causing differences in literacy development, such as parents' sensitive responsiveness towards their child. In order to examine whether prompting boards can be an effective tool for stimulating children's literacy and language skills, future intervention studies are needed. Furthermore, in light of the SES effects found, more research is needed to explore how prompting boards can be made more suitable for families from different socio-economic backgrounds.

06

Summary and general discussion

Enhancing literacy skills in children who are at risk of lagging behind in school is an international policy priority (Carpentieri et al., 2011; OECD, 2017; Kober, 2001). Recognizing the strong and long lasting influence of parents as first educators of their children, Family Literacy Programs (FLPs) aim to promote children's literacy development by stimulating the home literacy environment, particularly in low-SES and ethnic-minority families. In previous meta-analyses of FLP effect studies (Manz et al., 2010; Van Steensel et al., 2011, 2012), substantial differences in effects were found across studies. It has been speculated that variability in implementation quality is partly responsible for these differences. Moreover, certain types of interventions (particularly, those focusing on shared reading) have been found to be less effective for children growing up in low-SES and ethnic-minority families (Manz et al., 2010; Mol et al., 2008; Van Steensel et al., 2012). This raises questions about whether these families are capable of implementing such interventions optimally. Implementation quality has been shown to be an important factor in realizing intervention effects in other fields (Durlak & DuPre, 2008), and it can be argued to be of special importance in FLPs, due to the phased design of many interventions. However, little systematic attention has been given to how FLPs are implemented and to how implementation quality is related to effectiveness in earlier review studies and meta-analyses (Manz et al., 2010; Mol et al., 2008; Van Steensel et al., 2012).

Against this background, four studies were conducted. In the first study, we reviewed the literature on implementation quality of FLPs to gain insight into how implementation has been assessed in studies so far. Moreover, we were interested in what previous studies have revealed on systematic differences in the implementation of FLPs and their relation to intervention effects. In the second study, we analyzed whether implementation quality was related to effects of a Dutch FLP called 'Early Education at Home' (EEH; Dutch Youth Institute, 2014). In light of the hypothesis posed in the literature regarding implementation quality of FLPs in low-SES families (Van Steensel et al., 2012) and our hypotheses regarding implementation quality of FLPs in ethnic-minority families, we additionally analyzed relations among these parent background characteristics and program implementation. In the third and fourth study we took a more detailed look at parent-child interactions during a prototypical literacy-related activity, shared reading, and a so-called 'prompting board' activity. A prompting board consists of a complex picture around a certain theme, depicting a scenario (i.e., a picture that suggests a sequence of events; see Appendix C.1 for an example), and is meant to elicit child speech. Observations of these activities provided insight into how target group parents respond to different FLP activities and, more specifically, if certain activities are able to attenuate SES differences. We now turn to the main findings of this dissertation.

SUMMARY OF MAIN FINDINGS

In the first study, substantial differences were found in the amount of information provided in intervention studies across the three distinguished elements of implementation quality (Powell & Carey, 2012): delivery (parent training), receipt (parent engagement in training and program activities and strategies), and enactment (transfer of targeted behaviors and strategies to daily life). We observed that a comprehensive analysis of relevant implementation quality elements is generally lacking in the studies we reviewed. Particularly noticeable was the scarcity of results on program delivery: generally, it was assumed that programs were delivered from trainers to parents with fidelity. Moreover, self-reports instead of more direct measures (i.e., video-/audio-observations) were often used to measure implementation quality. When program implementation was measured, it was generally of high quality, with a few exceptions: some programs suffered from high attrition and low attendance at parent training sessions. This occurred relatively frequently in low-SES and ethnic-minority families. Associations between implementation quality and program effects were largely ignored, and when examined, results were inconsistent.

In the second study, we examined implementation quality and effects of EEH. First of all, no main intervention effects were found, nor were effects mediated by the parental attributes that the program was aiming to improve: quality and quantity of the home literacy environment and parent self-efficacy. In other words, the EEH program did not affect the home literacy environment and parent self-efficacy, and in turn, these variables did not influence children's literacy and language development. Second, program receipt—as measured by attendance at training sessions, diaries handed in, activities conducted, and quality of behavior and language during a program activity—did not predict children's language and literacy development. Third, no relations were found among parental SES, ethnic-minority status, home language, and variables representing the *quantity* dimension of implementation (e.g., attendance at training sessions, quantity of the home literacy environment). With respect to the *quality* dimension of implementation, however, we did find significant relations with parent background characteristics. Average quality of behavior and language during a program activity (shared reading) was observed to be lower in low-SES families. Similarly, ethnic-minority parents and parents who had indicated that Dutch was not their home language showed lower quality of behavior and language during this activity. Finally, change in enactment variables over the intervention year—

quality of behavior and language during a non-program activity, quantity of the home literacy environment and parent self-efficacy—was not related to parent background characteristics.

When comparing prompting boards and shared reading (Chapter 4 and 5), we found variety in both the total length of conversations and the use of abstract talk within parent-child dyads. First of all, we found that children contributed more often to the conversation during prompting board activities. Furthermore, parents and children produced more speech on the highest level of abstraction (inferencing) as well as on the lowest level (labeling, noticing, and locating) during prompting boards. Shared reading interactions, conversely, were characterized by more talk on the intermediate levels, which involved discussing aspects of objects and actions (the second level of abstraction), summarizing and integrating discourse elements, defining words, linking to the child's own experiences, and sharing personal opinions (the third level of abstraction). Moreover, higher-SES parents and children produced more highly abstract speech and less labeling and locating compared to lower-SES dyads. Contrary to our hypothesis, activity type was not related to SES differences in abstract interactions, implying that prompting boards were not more challenging for lower-SES parents than shared reading. Finally, parents' abstract talk during prompting boards was related to children's literacy and vocabulary skills, whereas their abstract talk during shared reading was not.

GENERAL DISCUSSION

The findings presented in this dissertation raise several issues for further discussion that will be described in the section below.

The Lack of Effects in the 'Early Education at Home' Intervention Study

An important question that springs from the findings of our study on the EEH program is: how can the lack of intervention effects be explained? On the whole, we must conclude that EEH did not contribute to children's literacy and language skills. However, given previous reports of differential effects of FLPs for low-SES and ethnic-minority families (Manz et al., 2010; Mol et al., 2008), and the heterogeneity in our sample, it is possible that effects occurred for specific subgroups. In this light we conducted additional analyses to test whether effects of EEH were moderated by parental SES, ethnic-minority status, and home language (not presented in Chapter 3; see Appendix D.1). This proved not to be the case,

indicating that the intervention was equally ineffective for families from various educational backgrounds, for ethnic-minority and native Dutch families, and for native Dutch speaking families and families with another home language.

One explanation for the lack of effects found, is the observed suboptimal program delivery (Powell & Carey, 2012). Although EEH is specifically developed for low-educated and ethnic-minority parents, in practice, a broad range of parents is involved (Kalthoff, personal communication). Such high group diversity poses significant challenges for the quality of program delivery. In our intervention study, we observed that it sometimes resulted in trainers focusing on higher-SES and native Dutch parents during training sessions, while ignoring the needs of lower-SES and ethnic-minority parents. In particular, instruction techniques targeting low-SES and ethnic-minority parents (modeling, enacting and role-play) were hardly used during training sessions by our intervention group teachers, even though they were specifically trained to use these techniques. Furthermore, the language of instruction during parent meetings was Dutch, which probably resulted in less optimal program delivery for parents with limited Dutch proficiency. It is likely that at least part of the 13% of parents who indicated that Dutch was not their home language experienced difficulties in comprehending the training sessions. This might partly explain the lack of intervention effects found, at least for some children from ethnic-minority families. In this respect, the large variability in the duration of parent meetings was not beneficial either (see also Swain et al., 2015). The cutbacks in time for meetings which we often observed, likely did not allow for sufficient support to low-SES and ethnic-minority families.

With respect to quality of program receipt, we believe that limited Dutch language proficiency may have also played a role in program implementation for ethnic-minority families. Although EEH recommends parents to conduct program activities in their home language, few translated materials were available at the time of our intervention study. Moreover, several parents who were more proficient in another language, still preferred to conduct the program in Dutch. Additionally, one school preferred not to offer materials in other languages. This resulted in only two parents—out of 59 parents who indicated to speak another language than Dutch—using translated materials. These preferences possibly originate from a lack of knowledge about the benefits of home language maintenance, among both teachers (Young, 2014) and parents. According to Wong-Fillmore (1991), ethnic-minority families tend not to stimulate their children in retaining their home language, believing that it will have negative consequences for learning the majority language. In line with this finding, in their evaluation of a multilingual version of

the Parents as Literacy Supporters program, Anderson et al. (2011) reported that some parents feared their children's English learning would be hampered by them continuing to use their home language.

We did not observe relations between implementation quality and children's development. Nevertheless, the data we collected on implementation did provide explanations for the absence of program effects. Although we were not able to quantitatively analyze program delivery—a teacher variable— due to the limited number of teachers in our sample, we did observe this element of implementation to be suboptimal. In particular, EEH delivery was insufficiently directed towards low-SES and ethnic-minority families. Furthermore, quantity of program receipt was suboptimal. As the end of the intervention year approached, we witnessed a decline in attendance, diaries handed in, and activities conducted. On average, parents returned approximately 4 out of 7 diaries and conducted about 60% of program activities. Moreover, low-SES and ethnic-minority parents in particular, lagged behind with respect to quality of receipt, as observed by quality of behavior and language during a program activity. In our observation studies (Chapter 4 and 5) we found similar differences between lower- and higher-SES families regarding quality of parent-child interactions: lower-SES parents and children showed less abstract talk than higher-SES parents and children. Finally, we did not observe any growth on enactment variables—quality of behavior and language during a non-program activity, quantity of the home literacy environment and parent self-efficacy—during the intervention year. This indicates that, overall, implementation quality of the EEH program was quite low, likely explaining part of the lack of EEH-effects.

Van Tuijl, Leseman, and Rispens (2001) evaluated the 'Opstap Opnieuw' program, while also examining receipt of the intervention. Opstap Opnieuw is a Dutch FLP similar in design to EEH, in that a range of literacy-related activities are offered to parents and children. It differs in delivery format, however, as Opstap Opniew is mainly transferred via home visits. Similar to our operationalization of receipt (minus the home visits), Van Tuijl et al. (2001) measured the number of activities carried out, the number of home visits, and the number of attended group training sessions. Similar to our findings, the authors reported no relations between implementation and program outcomes. They suggest that, in their case, most families had encountered an implementation 'ceiling', after which variation in implementation could not explain additional variation. This explanation seems unlikely in the case of our study however, as average scores on implementation variables were not particularly high. On the contrary, it seems more plausible that particularly the low-SES and ethnic-minority parents

in our sample did not reach an implementation threshold (at least for certain variables, such as quality of behavior and language) for these aspects of implementation to exert a meaningful influence on children's development.

Based on our observations of implementation quality, it could be argued that the lack of effects results from a lack of 'fit' between schools and teachers, the EEH program, and participating parents. This is reflected in two main issues. First, suboptimal delivery suggests that the delivery format of EEH does not correspond with the competencies of teachers and the needs of parents. Second, we wonder if the program contents were sufficiently aligned with the preferences of participating families. We believe that a more elaborate preparation for program implementation could enhance this 'fit' and thus benefit implementation quality (Meyers, Dupre, & Wandersman, 2012). For example, mapping teachers' and parents' language and cultural backgrounds, their motivation to participate (Perepletchikova & Kazdin, 2005), and families' existing home literacy practices beforehand, can provide valuable information. Based on this information, the fit between schools and teachers, the FLP itself, and participating parents, can be analyzed. In turn, actions might be taken to better align the needs of teachers and families (e.g., adapting the FLP, providing additional information or training to teachers and parents), thereby increasing the fit. We believe that differentiation is key in this respect. We will return to the issue of fit in our suggestions for future research, and in our implications for FLP interventionists.

Quality of Parent-Child Interactions: Prompting Boards and Shared Reading

Based on data from our intervention study, additional analyses of the diaries handed in by our experimental group parents showed that participating families rated prompting boards as slightly less fun and more difficult than the other activities offered in the program. Despite these ratings, prompting boards were conducted more often than other program activities (except for shared reading). Furthermore, as evidenced from our observational studies of parent-child interactions, prompting boards elicited more highly abstract speech (inferencing) compared to shared reading, from both high- and low-SES, and native Dutch as well as ethnic-minority families. During prompting board discussions we additionally found children to contribute more to the conversations. It seems that prompting boards are inherently suitable for stimulating active participation, as the role of the parent is less dominant than when reading a story aloud. This is an important finding, as previous studies have underlined the significance of children's active participation in language learning

situations for stimulating their literacy and language development (Bojczyk, Rogers-Haverback, Pae, Davis, & Mason, 2015; Huebner & Meltzoff, 2005; Mol & Neuman, 2014; Swain, 2000).

We found that lower-SES parents and children showed less abstract talk than higher-SES parents and children during both prompting board and shared reading activities. The relationship between parental SES and abstract talk by parents has been found in previous studies (Hoff et al., 2002; Mol et al., 2008; Korat et al., 2008). Contradicting our hypothesis that prompting boards might be especially challenging for low-SES parents, activity type did not moderate SES differences in abstract interactions: SES affected level of abstraction in both activity types to a similar extent. However, we did find random slope variance for the effect of activity type on abstract interactions, in this case indicating that, while for some parents and children prompting boards led to more abstract interactions, for other parents and children this was the case for shared reading. This result may be partly explained by a (confounding) effect of interest. For example, if the story is about a squirrel looking for nuts in the forest, and parents have recently gone for a walk in the forest with their child to collect nuts, they will likely start talking about this experience, leading to more abstract talk. For other parent-child dyads, the prompting board might be more relatable, for example because it pictures an outing they have recently undertaken together. Furthermore, parents' beliefs regarding the type of activities that best stimulate their child's development could be of influence (DeBaryshe et al., 2000; Weigel et al., 2006). Some parents might prefer shared reading over prompting boards, because they believe the former activity to be (more) beneficial for their child's development. Consequently, they might be more inclined to make shared reading into a learning experience. Since we did not collect additional information on interest or beliefs, these interpretations ask for future research (see Limitations and Suggestions for Future Research; The Prompting Board Studies).

Parents' Abstract Talk During Prompting Boards and Children's Literacy Skills

In both our observational studies and our intervention study we examined linkages between parents' behavior and (abstract) language use, and children's literacy skills. Results showed that parents' behaviors and use of abstract language during prompting board activities was associated with these skills. More specifically, parents who scored higher on various categories of stimulating behavior and measures of abstract language use, have children with better literacy and receptive vocabulary skills. Abstract talk during shared reading did not relate to these skills in children. This latter result contradicts some previous studies, that

found shared reading interactions to positively predict children's literacy skills (Beals, 2001; Serpell et al., 2005; Van Kleeck, 2008). Our findings are more in line with results presented by Neuman (1996) and Anderson, Anderson, Lynch, Shapiro, and Eun Kim (2012). Neuman (1996) questioned the dominant perspective that only certain types of interactions in shared reading stimulate children's language development, by suggesting that simply reading the text is beneficial to children, irrespective of extra-textual interactions. Work by Anderson et al. (2012) provided support for this suggestion, as the authors found no relations between types of questions asked during shared reading and children's early literacy skills. Following Neuman (1996) and Anderson et al. (2012), it might well be that the frequency of shared reading is more important for children's literacy and language development than the quality of extra-textual utterances, because the written text itself provides sufficient cognitive stimulation. During prompting board discussions, abstract speech reflects the quality of support that parents give to their child, more so than abstract speech during shared reading does. It can be argued that inferencing utterances are inherently important for prompting board discussions, as there is no storyline in which relationships between objects or events are explicated. In shared reading, much of this information is presented in the text and the use of abstract talk might imply that parents merely expand upon the storyline. Given the positive correlations between abstract talk during prompting boards and children's literacy and receptive vocabulary skills, it might be hypothesized that an intervention using prompting boards will be effective in promoting the development of these skills, but this needs to be examined in future research.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The studies presented in this dissertation have a number of limitations. These limitations, as well as the study outcomes described above, provide grounds for further research. We first focus on our evaluation of EHH, also integrating findings from our review study. We then present limitations and recommendations based on our observational studies of parent-child interactions during prompting board and shared reading activities.

The 'Early Education at Home' Intervention Study

In our intervention study on the EEH program, we were not able to randomly assign groups to conditions. No significant differences were found between conditions on pre-test scores and relevant background characteristics of parents and children (child gender and age, parental SES, ethnic-minority status, and home language, quantity and quality of

the HLE and parent self-efficacy), suggesting that conditions were comparable on possible confounding variables. However, it could be that unmeasured variables influenced the results of our analyses.

We were not able to quantitatively analyze the effects of program delivery—a teacher variable—due to the limited number of teachers in our sample for the intervention study on EEH. However, to truly test implementation effects, it is necessary to include delivery in the analyses. Delivery can be expected to play a role in other aspects of implementation as well: if transfer of program contents to parents fails, they can hardly be expected to carry out the program as intended. Taking this into account, we recommend researchers to incorporate delivery quality into effect analyses of FLPs. This can be realized by including larger samples on the delivery level (e.g., schools).

Despite substantial training and coaching of teachers in our intervention study, we found that techniques specifically targeting low-SES and ethnic-minority parents (modeling, enacting, and role-play) were hardly used during EEH training sessions, and that teachers did not adhere to program guidelines regarding the time for program delivery. Moreover, for some parents the information delivered during parent meetings was probably difficult to take in as the language of instruction during these meetings was Dutch. It is likely that these conditions hampered low-SES and ethnic-minority parents' understanding of the EEH program, and subsequently, their ability to implement the program as intended. However, we were not able to test this hypothesis as we did not measure parents' understanding of program training sessions. Future intervention studies might examine whether parents have picked up on program strategies in relation the quality of delivery. Such studies could make use of instruments that measure parents' understanding of an intervention, such as the Usage Rating Profile (URP-I; Chafouleas, Briesch, Riley-Tillman, & McCoach, 2009).

Furthermore, in our intervention study, we evaluated teacher training by asking teachers how they experienced the training and coaching sessions in post-intervention interviews. However, we did not directly assess whether teachers understood the program strategies as intended, although this determines to what extent teachers are capable of delivering the program (Briesch et al., 2008). We therefore recommend future researchers to include measures of teachers' understanding of the program in their evaluation studies, for example by administering the afore-mentioned URP (Chafouleas et al., 2009).

It can be argued that, in particular for low-SES and ethnic-minority parents, the observed suboptimal delivery of EEH was partly due to a lack of fit between schools and teachers, the

EEH program itself, and participating parents. Recent implementation research from other fields underlines an array of factors predicting implementation quality (e.g., motivation, recognizing the need for intervention, perceiving it as feasible to implement, program-context compatibility; Briesch et al., 2008; Perepletchikova & Kazdin, 2005; Modi & Quittner, 2006). These pre-implementation factors can shed light on the fit between the program deliverers (e.g., schools and teachers), the FLP, and participants. What remains unclear is whether and how the evidence from other research fields transfers to the field of FLPs. We did not take pre-implementation variables into account in our intervention study and recommend future researchers to examine pre-implementation factors and their relation to implementation quality of FLPs.

For ethnic-minority families, delivering FLPs in parents' home languages seems promising (Anderson et al., 2017; Hirst, Hannon, & Nutbrown, 2010). The rationale for these multilingual programs stems from Cummins' (1979) notion of linguistic interdependence, which suggests that knowledge and skills acquired by children in the first language can be transferred to the second language. Recent evidence for a common underlying proficiency (Cummins, 1981) in English and Spanish for code-related skills (phonological awareness and print-knowledge) was provided by Goodrich and Lonigan (2017). Although researchers have only recently began to study multilingual FLPs in ethnic-minority families (Compton-Lily et al. 2012), results seem promising for stimulating children's literacy skills. For example, Anderson et al. (2011) evaluated a multilingual version of the Parents as Literacy Supporters program, offered to 500 families of three-to five-year-old children. The program consisted of group sessions, partly joined by children, bilingual delivery and material for four language groups: Chinese, Farsi, Karen, and Punjabi. The authors found a significant increase in children's literacy knowledge in English. However, Anderson et al. (2011) did not include a control group, and did not measure child outcomes in their home languages. Hence, it remains unknown whether transfer occurred from children's L1 to L2. Although the program examined in our intervention study was delivered in the majority language, some ethnic-minority families conducted the program in their home language. We did not however, measure children's language and literacy skills in their home languages. Future studies are needed on multilingual FLPs, including longitudinal experimental designs and larger sample sizes (Anderson et al., 2011), and incorporating measures in both L1 and L2.

Based on our review of FLP implementation quality, we concluded that studies examining all relevant elements of implementation (as included in the framework of Powell & Carey, 2012) are scarce. Particularly, program delivery was rarely analyzed, neither quantitatively nor

qualitatively. Monitoring program delivery is relevant, however, and it can be expected to be of particular importance when training is not provided by researchers, but by practitioners (e.g., teachers). If researchers are not delivering the interventions themselves they are not fully able to control the way parents are instructed and trained. We recommend future studies to take a comprehensive approach to implementation quality, when evaluating FLP effect studies. After all, the various aspects of implementation influence each other, making the implementation chain only as strong as its weakest link.

Furthermore, our review study showed that only a limited number of studies analyzed the relationship between implementation quality and program effects. The studies that did, showed inconsistent results. A possible explanation for these inconsistencies in findings is that there are large differences in operationalization of the examined variables. Some studies focused on quantity variables (e.g., attendance, activities conducted), while others examined quality variables (e.g., parental scaffolding during shared reading), and some studies included a combination of quality and quantity variables. In order to be able to gain a deeper and more comprehensive understanding of how various implementation variables are related to program effects, for example by the use of meta-analytic techniques, we believe it would be beneficial to realize more uniformity in operationalization used in evaluation studies of FLPs. Further specifying the Powell and Carey (2012) framework that was employed in this dissertation, by suggesting instruments for measuring the distinguished aspects of implementation (e.g., the URP and the Kenney-scales), could contribute to such uniformity.

The Prompting Board Studies

Our analyses revealed significant random slope variance for the effect of activity type on the use of abstract talk in parent-child interactions, indicating that this effect varies across dyads. Within the current dissertation, we were not able to indicate a source for this random slope variance, implying that there are other variables than SES that can explain the varying effect of activity type on the use of abstract language in interactions. As suggested earlier, this result may be partly explained by a (confounding) effect of interest: some children or parents might have been more interested in the theme of the storybook than in that of the prompting board, while for others the reverse was true. In addition, parents' beliefs regarding the type of activities that best stimulate their child's development could be of influence (DeBaryshe et al., 2000; Weigel et al., 2006). Examining factors such as these can provide relevant information for finding the fit between program activities and target group parents.

We did not code interactions for contingency between parent and child utterances. In other words, the extent to which parental utterances were timely and functional for children was not taken into account in our observational studies. For example, when the child sees a picture of a hedgehog and does not know the corresponding label, a labeling utterance by the parent, although of a low level of abstraction, is likely beneficial for the child's understanding. In contrast, when the child is highly engaged in a story, a question about the child's own experiences can be distracting rather than stimulating. Therefore, it would be interesting to additionally code interactions for contingency during both activity types in future studies.

Finally, we found parents' abstract talk during prompting boards to be related to children's literacy and language skills. However, we cannot determine whether this association represents an effect of prompting board interactions per se, or whether this relation is a reflection of a more general parental skill, such as parents' sensitive responsiveness towards their child. To determine whether children's skills can improve as a result of parent-child interactions during prompting board activities, intervention studies are needed.

PRACTICAL IMPLICATIONS

The results of the four studies that together form this dissertation, have given rise to a number of recommendations for the field of family literacy interventions. The remainder of this chapter will touch upon these implications for policy and practice.

Improving the Fit Between Interventions, Program Deliverers, and Participants

In examining the implementation of a Dutch FLP, Early Education at Home (VVE Thuis), various issues arose pertaining to suboptimal delivery and receipt, particularly for low-SES and ethnic-minority parents. For example, teachers did not always focus on low-SES and ethnic-minority parents during training sessions and made cutbacks in instruction time. Our findings indicate that high quality of implementation is not self-evident. We therefore argue that it is important for interventionists to systematically organize and monitor FLP implementation. The elaborate framework of critical implementation steps developed by Meyers et al. (2012) can aid program implementers in this process. The authors distinguish four phases, combining insights from various research fields (e.g., health care, mental health treatment, education). Phase 1—initial considerations regarding the host-setting—pertains to examining the fit between the intervention, the host-setting (often schools or day care

centers in the case of FLPs), and the target group (e.g., parents). Phase 2 deals with creating a structure for implementation, for example by organizing implementation teams. Once implementation has started, the final two phases consist of ongoing implementation support strategies (Phase 3) and improving future interventions by learning from experiences (Phase 4). Interestingly, the majority of steps (10 out of 14) pertain to preparing for the intervention kick-off (i.e., before parents and children start working with the program). The authors stress the need to pay attention to the alignment of the needs of 1) the host-setting and the intervention, 2) the host-setting and participants, and 3) the intervention and participants (Meyers et al., 2012).

To pay attention to the alignment of implementers' needs, we believe it is important to systematically prepare for FLP implementation. Based on assessments of pre-implementation factors, such as teachers' and parents' language and cultural backgrounds and their motivation to participate (Perepletchikova & Kazdin, 2005), the fit between schools and teachers, the FLP itself, and participating parents can be mapped. This can help to increase the fit by, for instance, adapting the FLP, and providing additional information or training to teachers and parents. We believe that differentiation is key in this respect. A number of concrete adaptations might facilitate differentiation in implementation of FLPs such as EEH. First, we will discuss suggestions for adaptations in program delivery format, followed by possible adjustments of program content.

Differentiation in FLP-delivery

Program deliverers—mostly teachers or social workers in the case of Early Education at Home—are often confronted with a very diverse group of parents. Several measures might be taken to improve delivery in such situations. First of all, previous research has established that teacher education falls short of helping teachers acquire and develop the necessary interpersonal skills to engage and communicate with parents (Epstein & Sanders, 2006; Ferrara & Ferrara, 2005; Lawrence-Lightfoot, 2003; Lusse, 2015). We therefore argue that teachers need additional training in engaging and communicating with families from various socio-economic and cultural backgrounds, in order to successfully deliver FLPs to parents and children. Recognizing this shortage of teacher preparation in engaging with (a diverse group of) parents, and incorporating additional training when preparing teachers to deliver FLPs, can be a valuable step for FLP developers.

Second, dividing parents into subgroups for part of the meetings based on their instructional needs can help teachers differentiate during group meetings: it might prevent teachers

from feeling pressured to speed up their instructions in order not to bore higher-educated parents, or from feeling reluctant to use certain training techniques. Teachers in our EEH evaluation study reported such feelings as reasons to cut back training time and refrain from using role-playing techniques.

Third, offering additional home visits (in combination with group meetings) might be beneficial for differentiation. In their meta-analysis of FLPs, Manz et al. (2010) found such a home-based approach to be more effective than an exclusively center-based approach. The authors argue that home-visiting can be particularly helpful, as training in the school context implies a hierarchical relationship between program deliverers and parents, in which particular needs of families might be overlooked, while at the same time, opportunities for the families' input might be lacking (Harrison, Mitylene, & Henderson, 1991). This, in turn, could lead to disengagement, and low-SES or ethnic-minority families are particularly vulnerable to this disengagement (Dauber & Epstein, 1993; McElvany & Artelt, 2009; Wagner, 2003). Thus, Manz et al. (2010) argue that interventions for these families should be implemented with the flexibility to respond to their particular needs. Home visiting has the advantage that delivery can be tailored to these individual needs. Although Manz et al. did not specifically look at effects of home visits for low-educated and minority families, a number of FLPs that made use of home visits with at-risk families showed significant effects on child outcomes (Aram et al., 2013; Hannon et al., 2006; Hirst et al., 2010; Sylva et al., 2008).

Finally, although EEH is specifically developed for low-educated and ethnic-minority parents and their children, in practice, a broad range of parents is involved. This includes highly educated parents. The heterogeneous group of parents participating in the program results from the whole-class approach that is employed to prevent low-SES and ethnic-minority parents from feeling stigmatized (and as a result, refrain from participation). Findings from our intervention study showed that teachers were not always able to anticipate to this high group diversity in a desirable manner: they sometimes focused on higher-SES parents during training sessions, while ignoring the needs of lower-SES and ethnic-minority parents. Combined with our finding that the EEH program proved ineffective for both low- and high-SES families, and the extensive resources required for FLP implementation, it could be fruitful to target a more homogeneous group of parents.

Differentiation in FLP-content

Regarding differentiation in program content, we propose a number of adaptations for implementing FLPs such as Early Education at Home. First, differentiation in the goals set for

participating families might be fruitful. It could be argued that for families with limited HLEs, the strategies promoted in many FLPs are too demanding. In the case of Early Education at Home, parents are expected to offer stimulating questions and comments to their children during shared reading and prompting board activities, which involve making predictions (e.g., "Why do you think the fox is laughing?") and drawing conclusions (e.g., "The birds are migrating before winter comes, because they won't be able to find food here."). For parents that are not used to engaging their children in these interactions, the application of such interaction strategies might be difficult to train. For these families, a more realistic approach could be to (initially) adjust program goals. For example, program deliverers can work with parents on interacting with their children more often, without stressing the need to ask 'abstract' questions (Van Kleeck, 2008). Program developers might specify subgroups within target groups that are often broadly defined (e.g., low-SES, ethnic-minority families) and differentiate program goals according to relevant background factors, such as parents' literacy abilities.

Second, in line with the rationale for program delivery in parents' home language, we recommend program developers to create program materials for various language groups, in order to facilitate program receipt. Tabors and Snow (2001) cautioned against encouraging parents to interact with their children in a majority language when this language is not as well developed as their home language. Findings from our intervention study showed that, although some translated materials were available, and most schools recommended parents to conduct the program in their home language, one school and the majority of bilingual parents preferred to work with the Dutch version of the program. These preferences possibly originate from a lack of knowledge about the benefits of home language maintenance (Anderson et al., 2011; Wong-Fillmore, 1991; Young, 2014). In their evaluation of a multilingual version of the Parent As Literacy Supporters program (PALS), Anderson et al. (2011) reported a decrease in families' home language use during program implementation. Some parents feared their children's English learning would be hampered by them continuing to use their home language. Against this background we recommend interventionists to pay attention to the benefits of home language maintenance for children's literacy and language development, when training program deliverers, as well as during program delivery to parents.

A third possible area for improvement involves the program activities used in programs such as EEH. These activities might not align with all families' literacy practices. In the late eighties, FLPs have been criticized by researchers who pointed out that these programs

were mostly based on mainstream Western pedagogies, and ignored the cultural capital of ethnic-minority families (Auerbach, 1989; Moll et al., 1992). More recently, Manz et al. (2010) argued for a more partnership-driven approach to intervention research. Such an approach relies heavily on active involvement of stakeholders (e.g., parents and children), in order to form theories and methods that underlie study designs (Fantuzzo, Weiss, & Coolahan, 1998). Specifically, incorporating more culturally sensitive program materials, for example by co-constructing activities with participating families (Anderson et al., 2011), might benefit implementation quality for parents from various cultural backgrounds.

Fourth, our findings showed that prompting board activities elicited more highly abstract speech (inferencing) than shared reading, from both high- and low-SES, and native Dutch as well as ethnic-minority parents and children. Overall, however, differences between SES groups in abstract interactions remained, with lower-SES parents and children showing less abstract talk. This observation indicates that we might need to revisit the way in which FLPs such as Early Education at Home aim to enhance parent-child interaction quality (i.e., via training sessions, and instruction sheets accompanying program activities). One alternative approach would be to incorporate interaction prompts into the program activities, in contrast to providing them separately. Lauricella, Barr, and Calvert (2014) examined the effect of computer-driven interaction prompts in a higher-SES sample of parents and their four-year-old children. The authors suggest that computer-driven prompts might benefit interaction quality. This is illustrated by a scene from one of the digital story books used in their study, in which the main character is in the waiting room at the doctor's office with his friends. The child can click on the characters and find out what their complaints are. For example, when the child clicks on the horse, the horse says, "I'm feeling a little hoarse" (Lauricella et al., 2014, p. 23). Reacting to this prompt, a mother defined the word hoarse by saying, "remember when a couple weeks ago mommy's voice was funny—it was kind of hoarse" (Lauricella et al., 2014, p. 23). More recently, Teepe (2018) examined the effects of technology-enhanced storytelling on the quality of parent-child interactions in an experimental setting. The researchers developed a tablet game consisting of a sequence of interactive scenes, providing a possible story structure. Parents and children were triggered to explicate story elements by means of real-time visual, auditory and textual prompts. The use of digital prompts showed to be associated with improved parent–child interaction quality, as well as with vocabulary growth in children (Teepe, 2018).

Finally, the phased design of most FLPs presents challenges for implementation, as the chain is only as strong as its weakest link. One way to shorten the chain, is to involve both

parents and children in program delivery. Consequently, parents will be able to directly implement new techniques, and deliverers can provide immediate feedback on parents' attempts. Such an approach seems promising in early intervention settings with low-SES and ethnic-minority families (Anderson et al., 2011; Van der Pluijm, Van Gelderen, & Kessels, in preparation).

GENERAL CONCLUSION

Despite the importance of implementation quality in program evaluations, this dissertation showed that a comprehensive analysis of relevant implementation quality elements is generally lacking in effect studies of Family Literacy Programs. A Dutch Family Literacy Program called Early Education at Home (VVE Thuis; NJi, 2014), neither showed effects on children's language and literacy development, nor did it impact the parental attributes that the program was aiming to improve: quality and quantity of the home literacy environment and parent self-efficacy. Furthermore, implementation quality of Early Education at Home showed no relations to program effects. Implementation data did provide explanations for the lack of effects: it is likely that the low-SES and ethnic-minority parents in our sample in particular did not reach an implementation threshold for the program to exert a meaningful influence on children's development. Moreover, it seemed that the 'fit' between schools and teachers, the program, and participating parents was insufficient.

This dissertation also showed that other activities than shared reading can be utilized to stimulate the quality of parent-child interactions. So-called 'prompting boards' seem promising activities for early literacy interventions, particularly because of their potential to engage children in conversations, and their ability to stimulate highly abstract parent-child discussions. Abstract interactions are important for children's inferencing abilities and later reading comprehension, which was supported by our observation that the highly abstract, inferencing talk elicited from parents during prompting board discussions was related to children's literacy and receptive vocabulary skills. Nevertheless, future studies are needed to corroborate these results and to determine whether the observed association might represent a cause-effect relationship. For low-SES and ethnic-minority families, prompting boards elicited inferencing talk as well, but SES differences in abstract interactions still remained. Future studies are thus needed to examine how, in the context of FLPs, low-SES and ethnic-minority parents can be facilitated to realize more stimulating interactions.

Our findings indicate that high implementation quality of FLPs is not self-evident. Therefore, we underline the need to pay attention to implementation quality, both in research and practice. Future studies should comprehensively examine the role of implementation quality in program evaluations, while in practice, systematic preparation for implementation of FLPs is necessary. Ensuring the 'fit' between schools and teachers, the program, and participating parents, seems of key importance. Promoting differentiation, both in delivery and program content, will help to better support participating families from various socio-economic and cultural backgrounds in implementing FLPs.

APPENDICES

APPENDIX A. SUPPLEMENTARY MATERIALS FOR CHAPTER 2

Appendix A.1. Description of included Family Literacy Program's (numbers corresponding with primary studies in brackets; see Table 2.2, p. 30)

Aram et al. (2013) intervention (2)

The aim of this intervention is to increase parental reference to a story and its social-cognitive themes to help increase their child's social cognition. The intervention is designed for 4-5 year old children from low-SES backgrounds and starts with a workshop, given by the researchers, for parents on guiding their children, the relevance of reading and social cognition. Parents receive a new book every week which they are encouraged to read four times a week using specific guidelines.

Berlin Parent-Child Reading Program (28)

The purpose of this program is to support fluency, metacognition, vocabulary, motivation and comprehension in 4th grade children. The program contains three sessions a week. In every session a text is read aloud to the child and the parent asks metacognitive and comprehension questions. Parents help their children to answer these questions. Furthermore, the activities include a cognitive task or motivation task. Parents receive materials and booklets with instructions, developed by the researchers.

Books in Bags (BIB; 12)

The purpose of this intervention is to enhance the reading levels of first grade children. Parents learn about the procedures of the Reading Recovery model, the content of lessons and a strategy to help children to identify words they don't know. The teacher models a lesson with the child about which the parents can ask questions. Three times a week parents receive instructional materials. A 'Books in Bags' lesson is comprised of rereading books, naming letters, writing a sentence, sequencing words to make a sentence and reading a new book.

Bridge Program (3)

During the Bridge program, parents receive suggestions for activities to promote emergent literacy in their preschool children and learn about the development of their child. Teachers encourage the parents, keep track of parental activity, and in addition provide activities in the classroom. Parents, teachers and children develop a 'learning kit' together with activities and materials to enhance literacy.

Dialogic Reading (5, 6, 7, 9, 14, 16, 19, 20, 37, 40)

Dialogic Reading is a specific approach to shared book reading that incorporates discussion between caregiver and child. Guideline principles include the use of evocative techniques that encourage the child to retell the story, and use of feedback, in order for progression to occur in the child's level of independent reading. The acronym PEER is used to help parents remember the steps: prompt and wait, evaluate response, expand the answer and repeat what the child says. The acronym CROWD is used to describe different prompts: completion, recall, open-ended, wh-prompts and distancing prompts.

Doyle and Zhang (2011) intervention (11)

This eight-week family literacy program is designed for children aged 3-5 and aims to increase their literacy skills by enhancing parents' knowledge and strategies for fostering their children's literacy development. The program consists of a parent-only model and a parent-child model. In the parent-only model, parents discuss previous program activities, after which the new topic is introduced. Parents are stimulated to engage their children in literacy activities at home. In the parent-child model, parents and children attend sessions together.

Early Access to Success in Education (EASE; 21)

Kindergartners and their parents participated in this study. EASE was designed to increase the frequency and quality of language interactions through book-centered activities and to give parents information about and opportunities for engagement in their children's developing literacy abilities. The parent training sessions consisted of a coaching session, a take-home guide and a parent education session followed by opportunities to engage in structured parent-child activities designed to provide practice in the desired interaction.

Family Literacy Bags (FLB; 10)

The purpose of FLB is to involve parents and their kindergartners in reading at home by doing various activities. Parents and children receive a bag with three children's books covering different levels and genres. Activities and materials are also included. Furthermore, instructions for the parents to read the books and discuss them with their child are explained to parents during a group meeting.

Getting Ready Project (24, 36)

The getting ready project aims to promote school readiness by improving parental involvement of parents of children aged 0-5. Home visitors observe parent-child interaction, often in home settings, to support parents' practices and interaction with their children. They discuss effective approaches, model parenting strategies and provide feedback.

Home Education Learning Program (HELP; 29)

This program aims at first grade students and their caregivers and consists of 12 interactive home-learning packets designed to improve the child's reading skills. The activities also aim to increase the parents' abilities and confidence levels to provide assistance to their children. Parents are provided with instructions on specific reading strategies for each activity.

Home Instruction Program for Preschool Youngsters (HIPPY; 23)

In this program, low-SES mothers receive guidance on child development, parental wellbeing and family relationships twice a week. Mothers learn how to parent, cope and communicate better. This program is combined with a cognitive program: a translation of the Home Instruction Program for Preschool Youngsters (HIPPY). Every week mothers receive storybooks and worksheets. Paraprofessionals, who are similar in SES to the parents, teach them how to use these materials.

Head Start REDI (4)

Head Start REDI aims to promote language, emergent literacy, and social- emotional skills to increase school readiness for preschool children from low-SES families. Teachers attend workshops to learn to use research-based practices. Parents receive parenting tips and suggestions for learning activities to complete with their children.

Incredible Years (IY) and Supporting Parents on Kids Education in Schools (SPOKES; 35, 39)

This intervention focuses on behavior- and literacy problems in 5 and 6 year olds. Another important aspect is the emotional support and understanding that children receive from their parents. The intervention consists of three terms: The first entails 12 sessions on behavior management, the second includes 10 sessions on literacy and the third combines both of these aspects in six sessions. Both components contain training and home visits for parents.

Justice, Weber, Ezell, and Bakeman (2002) intervention (22)

This intervention aims at Head Start children from low-SES families. This program aims to enhance print awareness in children. Parents receive training via videotape about what print-referencing behavior is and how they can show this to their children. Print- referencing behavior exists of questions, comments and requests about text.

Letter Cards (38)

The purpose of this intervention is to enhance early literacy skills. Parents receive instructions and practice a session after which they receive feedback. Parents are provided with lessons and activities (f.e. cards with letters and pictures) to engage in with their children. There are 27 sessions of 15 minutes, parents are meant to complete these within 9 weeks.

Levin and Aram (2012) intervention (27)

This intervention is meant for kindergartners from low-SES families. Parents are divided in three intervention groups, all aimed to increase literacy skills in children. The first program contains reading a storybook with instructions. The second program consists of the writing training (naming letters, spelling) and the third program aims at training the fine visuo-motor skills by, for example, drawing and painting. Every week a home visit is planned to monitor parents' experiences.

Opstap Opnieuw (OO; 41, 42, 43)

The Opstap Opnieuw program aims at 4- tot 6-year-old children from hard to reach families. The program contains a structured curriculum built on the matrix of proximal goals, specifying all kinds of educational activities to be carried out collaboratively at home by mother and child. The program aims to improve the cognitive and social-emotional quality of mother-child interactions and the child's cognitive and language skills. Mothers are supported by paraprofessional aides who visited the families every two weeks and organized group meetings.

Paired Reading (8, 13, 25, 30, 31, 32)

Paired Reading is an intervention designed to enhance fluency and accuracy in reading in children experiencing reading difficulties during grade 3 and 4. During a Paired Reading session, parent and child read aloud. When the child makes a mistake, the parent corrects while pointing out the word. After reading, parent and child discuss the story.

Parents As Literacy Supporters (PALS; 1, 26)

PALS is designed for 3- to 5-year-olds and their parents and targets global parenting techniques. Parents are trained during group sessions and home visits. Topics include learning the alphabet, learning to write, reading with children, and numeracy development.

Parents as Teachers (PAT; 17, 44, 45)

PAT is a parent education program that encourages positive child development through parent education that is provided during home visits and group meetings by trained parent educators. The standard curriculum used in the home visits begins prenatally and emphasizes the first 3 years of life and additional materials are designed for parents of 3- to 5-year-olds. The program's major goals are: Empowering parents to give their children the best possible start in life and a solid foundation for school success, prevent and reduce child abuse, increase parents' feelings of competence and confidence and develop home-school-community partnerships.

REAL project (15, 18)

The purpose of this project is to enhance preschoolers' literacy and is based on the ORIM model: Parents can give children Opportunities to learn, Recognize the child's actions, Interact with their children and provide literacy Models. The program includes four aspects of literacy: Environmental print, books, writing and oral language. During the program home visits take place, in which parents are instructed on how to encourage their child, and parents receive literacy resources. Group meeting and special events are organized (for instance going to the library) and there is postal communication between the teacher and the child.

Saint-Laurent and Giasson (2005) intervention (34)

This program offers parents of first grade children 9 workshops on reading, including information on the relevance of reading and visiting a library. Activities to stimulate spelling and writing, reading strategies and ways to encourage and guide children in reading are discussed. Every parent receives books and materials (scrap book, plastic letters, etc.) to engage in literacy-related activities with their child at home.

Words to Go (WTG) (33)

In this intervention, parents 'make and break' words at home with their first grade children. Parents are trained for the intervention during workshops and provided with print materials (letters). Materials are based on the school curriculum. Parents and children receive weekly lessons and homework activities.

Yaden et al. (2000) intervention (46)

The intervention is based on the premise that positive learning outcomes with ethnic-minority Latino students are most likely to occur when there is interaction between challenging, meaningful learning tasks, adults who respect children's intellectual ability and their cultural capital and language activities with opportunities to share their ideas and opinions in both their native languages and English. It is a 2 to 3-hour morning language and literacy program for four-year-old preschool children. Parents can lend books at the program-library and workshops are organized for parents to encourage reading and literacy at home.

APPENDIX B. SUPPLEMENTARY MATERIALS FOR CHAPTER 3

Appendix B.1. Observation scheme based on Kenney (2012)

Name observer: Date:

Name school:

Name child: Gender: Group:

Name parent:

Time allocation	
Start time activity	
End time activity	

Notes: Does parent follow (program) instructions?

1. Labeling/concepts

Definition: Labels; produces information, describes, defines

	V
(1) Not at all characteristic *Parent makes almost no attempt to identify objects or label. She/He does not use the activity as an opportunity for word/picture identification.*	
(2) Weakly characteristic *Infrequent labeling or weak stimulation.*	
(3) Moderately characteristic *Provides labels frequently but does not seem to make an intentional effort to define or describe them.* • What is this..? • What is he holding in his hands? • What is this animal called? • Do you know what a refrigerator is?	
(4) Very characteristic *Parent consistently produces labels information and provides descriptions.* • When you go grocery shopping you can make a shopping list, so you know what to buy • Look, this is a duck, it has a short neck. And this is a swan, it has a long neck. • Do you know what those are? Earwarmers. He wears them to keep his ears warm. • Which animal is small and cute and has a prickly back?	

2. Generalizes words/concepts

Definition: Encourages/asks the child to make connections from the observable to the non-observable; uses propositional and hypothetical thinking; includes inference/cause and effect; generalizing; proposing alternative; abstractions. A rating of 1 or 2 characterizes parents who refer only to the observable in their conversation. A rating of 3 or 4 characterizes parents who move discussion to the unobservable.

	V
(1) Not at all characteristic *Parent refers only to the observable, such as in labeling and pointing.*	
(2) Weakly characteristic *Parent elaborates concepts, but only about the observable. Compares and contrasts characters or objects within the activity.* • You can see this bug is bigger than your hand. See that? • How is this polar bear different than the zebra?	
(3) Moderately characteristic *Parent frequently makes connections to the unobservable. Compares and contrasts unobservable properties. Refers to past experiences.* • Remember going to Meijer and seeing them in the tank? • Remember right outside our door we used to have flowers and the bees would come up and we'd watch them? • It's like the one you saw at school.	
(4) Very characteristic *Parent makes strong inferences to the unobservable. There is consistently effort to generalize to the hypothetical.* • When do we see mosquitos: in summer or winter? • What do the birds do before winter comes? • How do you think the squirrel feels about that?	

3. Repetition and paraphrasing

Definition: Using paraphrasing as an effective way to repeat instructions or main ideas.

	V
(1) Not at all characteristic *Little attempt to repeat instructions or main ideas.*	
(2) Weakly characteristic *Repeats but does not paraphrase.*	
(3) Moderately characteristic *Paraphrases regularly.*	
(4) Very characteristic Consistently paraphrases instructions or main ideas to get information across.	

4. Scaffolding

Definition: The degree to which the parent intentionally tries to foster the child's development. A stimulating parent may take advantage of even simple activities that can facilitate learning. Activities must be appropriate for the child's skill level.

Example activities:

- Look through the magnifying glass.
- Count the legs on the insect. How many does it have?
- Why don't you follow your finger like this as I'm reading

	V
(1) Not at all characteristic Parent makes almost no attempt to provide stimulation or support to teach the child anything.	
(2) Weakly characteristic *Parent only suggests activities or directs attention of the child to objects, but does not extend that suggestion. Parent either asks questions before reading, OR during reading OR after reading.*	
(3) Moderately characteristic *Parent offers frequent support to scaffold child's engagement in activities.*	
(4) Very characteristic *Parent is consistently stimulating and takes advantage of many activities as opportunities for stimulation. It is clear that the parent is making the activity a learning experience for the child.*	

5. Parents fostering of child autonomy

Definition: The ability of the parent to respond to the child's behavior in both an appropriate and timely manner (responding to the child's cues rather than the way around).

	V
(1) Not at all characteristic *Parent is on his/her own agenda; may not listen to child.*	
(2) Weakly characteristic *Parent responds occasionally to child in a general, non-specific manner.* • Good job. That's right. Ok. Uh-huh.	
(3) Moderately characteristic *Parent frequently acknowledges child's behavior in a specific manner.* • Good. That's a big tree, isn't it? • Child: he has a gift. Parent: All right, so do you think he can unwrap it now? • Child: what is that owl doing? Parent: that's its home, he lives there.	

(4) Very characteristic *Parent consistently acknowledges child's behavior and encourages child to exercise own perspectives.* • Child uses magnifying glass. Mom says "You like looking at insects through the magnifying glass? What is it making me look like? Does it make me look big?	

6. Quantity and variety

Definition: This feature looks at length of utterances, quantity of word types, richer vocabulary, and more varied syntactic frames. The latter pertains to the use of subordinate clauses and establishing cause and effect (e.g., because..).

	V
(1) Not at all characteristic *Simple and short phrases and commands.*	
(2) Weakly characteristic *Longer utterances but few challenging words.*	
(3) Moderately characteristic *Exposes child to rich vocabulary but little attempt to explain or define.* • Brighter colors are giving warnings to *predators.* • I think it's called a *larva.*	
(4) Very characteristic *Exposes child to rich vocabulary and uses more complex syntactic structures.* • This flower is lilac, which is a light purple color. • This is a troll, a troll is a fantasy figure which means that it's not real but made up and can only be seen in books or movies.	

APPENDIX B.2. PARAMETER ESTIMATES FOR ANALYSES OF DIRECT INTERVENTION EFFECTS (RESEARCH QUESTION 1)

TABLE B.2.1. Exploration Multi-level Structure – Language Development

Model	**0**	**1**	**2**
Fixed part			
Intercept	45.428 (.973)	45.498 (1.267)	44.949 (1.733)
Time (gm)	7.610 (.337)	7.615 (.337)	7.610 (.336)
Random part (variances)			
Repeated measures	43.639 (3.143)	43.645 (3.139)	43.637 (3.138)
Pupil	93.697 (10.626)	82.726 (10.016)	82.567 (9.987)
Class		12.160 (6.970)	0.921 (4.008)
School			13.630 (9.701)
Deviance	4404.448	4397.702	4393.679
Reference model		0	1
Fit improvement		$\chi^2 = 6.746$ df = 1 $p < .01$	$\chi^2 = 4.023$ df = 1 $p < .05$

Note. N repeated measures = 603; N pupils = 217; N classes = 18; N schools = 7. gm = grand mean centered.

TABLE B.2.2. Multi-level Regression – Effect of EEH on Language Development

Model	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*
Fixed part			
Intercept	62.195*** (1.333)	62.255*** (1.647)	62.252*** (1.646)
Time	7.711*** (0.404)	7.711 (.404)	7.567*** (0.627)
Child gender (girl=1)	3.949** (1.305)	3.949** (1.305)	3.947** (1.305)
Child age (gm)	0.427* (0.168)	0.427* (0.169)	0.427** (0.169)
Parent SES (gm)	2.441*** (0.618)	2.441*** (0.618)	2.444*** (0.618)
Parent home language: Dutch and other equal	-7.405 ** (1.999)	-7.398** (2.001)	-7.398** (2.001)
Parent home language: other	-5.219** (1.763)	-5.222** (1.764)	-5.2222** (1.765)
Condition (EEH=1)		-0.112 (1.816)	-0.108 (1.813)
Condition × Time			0.247 (0.821)
Random part (variances)			
Repeated measures	46.044 (3.877)	46.043 (3.877)	46.029 (3.876)
Pupil	40.663 (7.100)	40.644 (7.097)	40.662 (7.099)
Class	7.338 (5.983)	7.380 (6.000)	7.328 (5.981)
School	1.567 (4.306)	1.574 (4.319)	1.592 (4.320)
Deviance	3098.467	3098.463	3098.372
Reference model		1	2
Fit improvement		$\chi^2 = .004$ df = 1 p = n.s.	$\chi^2 = .091$ df = 1 p = n.s.

Note. N repeated measures = 434; N pupils = 152; N classes = 18; N schools = 7. gm = grand mean centered. Parent home language reference category = Dutch. EEH = Early Education at Home. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.2.3. Exploration Multi-level Structure – Literacy Development

Model	**0**	**1**	**2**
Fixed part			
Intercept	0.868 (0.038)	0.839 (0.078)	0.834 (0.108)
Random part (variances)			
Pupil	0.294 (0.029)	0.192 (0.037)	0.192 (0.020)
Class		0.091 (0.020)	0.051 (0.029)
School			0.052 (0.045)
Deviance	333.732	278.619	277.132
Reference model		0	1
Fit improvement		$\chi^2 = 55.11$ df = 1 $p < .001$	$\chi^2 = 1.487$ df = 1 p = n.s.

Note. N pupils = 207; N classes = 18; N schools = 7. n.s. = non-significant.

TABLE B.2.4. Multi-level Regression – Effect of EEH on Literacy Development

Model	**1** ***B (SE)***	**2** ***B (SE)***
Fixed part		
Intercept	0.863*** (0.084)	0.833*** (0.119)
Child age (gm)	-0.027** (0.009)	-0.027** (0.009)
Condition (EEH=1)		0.060 (0.167)
Random part (variances)		
Pupil	0.104 (0.042)	0.174 (0.021)
Class	0.174 (0.021)	0.103 (0.042)
Deviance	209.386	209.257
Reference model		1
Fit improvement		$\chi^2 = 0.129$ df = 1 p = n.s.

Note. N pupils = 162; N classes = 18; N schools = 7. gm = grand mean centered. EEH = Early Education at Home. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.2.5. Exploration Multi-level Structure – Vocabulary Development

Model	**0**	**1**	**2**
Fixed part			
Intercept	4.400 (0.281)	4.450 (0.345)	4.450 (0.345)
Random part (variances)			
Pupil	16.191 (1.599)	15.457 (1.595)	15.457 (1.595)
Class		0.733 (0.714)	0.733 (0.714)
School			0.000 (0.000)
Deviance	1152.581	1150.700	1150.700
Reference model		0	1
Fit improvement		$\chi^2 = 1.881$ df = 1 *p* = n.s.	$\chi^2 = 0.000$ df = 1 *p* = n.s.

Note. N pupils = 205; N classes = 18; N schools = 7. n.s. = non-significant.

TABLE B.2.6. Regression – Effect of EEH on Vocabulary Development

Model	**1** ***B (SE)***	**2** ***B (SE)***
Intercept	4.359*** (0.297)	4.391*** (0.459)
Child age (gm)	-0.249*** (0.075)	-0.249*** (0.076)
Condition (EEH=1)		-0.055 (0.603)
Variance	14.065 (1.573)	14.064 (1.572)
Deviance	877.053	877.044
Reference model		1
Fit improvement		$\chi^2 = 0.009$ df = 1 *p* = n.s.

Note. N = 160. gm = grand mean centered. EEH = Early Education at Home. n.s. = non-significant.* $p < .05$; ** $p < .01$; *** $p < .001$.

APPENDIX B.3. PARAMETER ESTIMATES FOR ANALYSES OF MEDIATION OF EEH EFFECTS BY ENACTMENT VARIABLES (HLE, PSE, & NPA; RESEARCH QUESTION 2)

TABLE B.3.1. Exploration Multi-level Structure – Change in HLE

Model	**0**	**1**	**2**
Fixed part			
Intercept	-0.039 (0.028)	-0.039 (0.028)	-0.039 (0.028)
Random part (variances)			
Pupil	0.145 (0.015)	0.145 (0.015)	0.145 (0.015)
Class		0.000 (0.000)	0.000 (0.000)
School			0.000 (0.000)
Deviance	167.463	167.463	167.463
Reference model		0	1
Fit improvement		$\chi^2 = 0.000$ df = 1 *p* = n.s.	$\chi^2 = 0.000$ df = 1 *p* = n.s.

Note. N pupils = 184; N classes = 18; N schools = 7. n.s. = non-significant.

TABLE B.3.2. Exploration Multi-level Structure – Change in PSE

Model	**0**	**1**	**2**
Fixed part			
Intercept	-0.021 (0.031)	-0.021 (0.031)	-0.021 (0.031)
Random part (variances)			
Pupil	0.172 (0.018)	0.172 (0.018)	0.172 (0.018)
Class		0.000 (0.000)	0.000 (0.000)
School			0.000 (0.000)
Deviance	192.404	192.404	192.404
Reference model		0	1
Fit improvement		$\chi^2 = 0.000$ df = 1 *p* = n.s.	$\chi^2 = 0.000$ df = 1 *p* = n.s.

Note. N pupils = 179; N classes = 18; N schools = 7. n.s. = non-significant.

TABLE B.3.3. Exploration Multi-level Structure – Change in NPA

Model	0	1	2
Fixed part			
Intercept	-0.156 (0.051)	-0.156 (0.051)	-0.156 (0.051)
Random part (variances)			
Pupil	0.331 (0.041)	0.331 (0.041)	0.331 (0.041)
Class		0.000 (0.000)	0.000 (0.000)
School			0.000 (0.000)
Deviance	223.455	223.455	223.455
Reference model		0	1
Fit improvement		$\chi^2 = 0.000$ df = 1 *p* = n.s.	$\chi^2 = 0.000$ df = 1 *p* = n.s.

Note. N pupils = 129; N classes = 18; N schools = 7. n.s. = non-significant.

TABLE B.3.4. Regression – Effects of EEH on Change in HLE, PSE, and NPA

Model	1 HLE *B (SE)*	2 HLE *B (SE)*	3 PSE *B (SE)*	4 PSE *B (SE)*	5 NPA *B (SE)*	6 NPA *B (SE)*
Intercept	-0.040 (0.035)	-0.038 (0.049)	0.009 (0.033)	-0.025 (0.053)	-0.156** (0.051)	-0.076 (0.074)
Child age (gm)			0.021** (0.008)	0.022** (0.008)		
Parent ethnic-minority status (ethnic-minority = 1)	-0.000 (0.059)	-0.000 (0.059)				
Condition (EEH = 1)		-0.004 (0.058)		0.056 (0.068)		-0.147 (0.101)
Variance	0.146 (0.015)	0.146 (0.015)	0.159 (0.019)	0.158 (0.019)	0.331 (0.041)	0.326 (0.041)
Deviance	167.364	167.359	143.436	142.752	223.455	221.346
Reference model		1		3		5
Fit improvement		$\chi^2 = 0.005$ df = 1 *p* = n.s.		$\chi^2 = 0.684$ df = 1 *p* = n.s.		$\chi^2 = 2.109$ df = 1 *p* = n.s.
N Pupils	183	183	144	144	129	129

Note. gm = grand mean centered. EEH = Early Education at Home. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.3.5. Multi-level Regression – Effect of Change in HLE on Language Development

Model	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*
Fixed part			
Intercept	62.583*** (1.379)	62.337*** (1.375)	62.341*** (1.278)
Time (gm)	7.659*** (0.428)	7.662*** (0.428)	7.654*** (0.429)
Child gender (girl=1)	4.493*** (1.340)	4.657*** (1.330)	4.653*** (1.330)
Child age (gm)	0.465* (0.186)	0.462* (0.184)	0.463* (0.184)
Parent SES (gm)	2.455*** (0.667)	2.383*** (0.662)	2.382*** (0.662)
Parent home language: Dutch and other equal	-6.538** (2.162)	-6.297** (2.145)	-6.298** (2.145)
Parent home language: other	-6.301*** (1.804)	-6.315*** (1.785)	-6.309*** (1.785)
Condition (EEH = 1)	-0.126 (1.461)	0.002 (1.445)	-0.001 (1.445)
HLE change (gm)		3.498 (2.097)	3.488 (2.097)
HLE change (gm) × Time			0.385 (1.278)
Random part (variances)			
Repeated measures	47.991 (4.186)	48.040 (4.190)	48.033 (4.189)
Pupil	6.962 (10.878)	6.705 (10.755)	6.678 (10.733)
Class	42.112 (13.008	39.035 (20.204)	39.050 (20.190)
School	0.000 (0.000)	1.897 (15.868)	1.889 (15.864)
Deviance	2897.495	2894.768	2894.677
Reference model		1	2
Fit improvement		$\chi^2 = 2.727$ df = 1 *p* = n.s.	$\chi^2 = 0.091$ df = 1 *p* = n.s.

Note. N repeated measures = 404; N pupils = 142; N classes = 18; N schools = 7. gm = grand mean centered. EEH = Early Education at Home. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.3.6. Multi-level Regression – Effect of Change in PSE on Language Development

Model	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*
Fixed part			
Intercept	62.782*** (1.502)	62.677*** (1.572)	62.686*** (1.570)
Time (gm)	7.677*** (0.432)	7.684*** (0.431)	7.687*** (0.432)
Child gender (girl=1)	4.261*** (1.371)	4.272*** (1.366)	4.265*** (1.366)
Child age (gm)	0.405* (0.178)	0.448* (0.180)	0.450* (0.180)
Parent SES (gm)	3.137* (1.502)	3.107*** (0.722)	3.105*** (0.722)
Parent home language: Dutch and other equal	-6.167** (2.170)	-6.242** (2.167)	-6.243** (2.166)
Parent home language: other	-6.740*** (1.834)	-6.502*** (1.839)	-6.495*** (1.839)
Condition (EEH = 1)	-0.673 (1.649)	-0.597 (1.650)	-0.597 (1.654)
PSE change (gm)		-2.094 (1.671)	-2.078 (1.671)
PSE change (gm) × Time			-0.338 (1.068)
Random part (variances)			
Repeated measures	48.156 (4.232)	48.069 (4.224)	48.058 (4.223)
Pupil	42.682 (7.796)	41.586 (7.657)	41.569 (7.655)
Class	3.504 (4.657)	3.600 (4.793)	3.660 (4.811)
School	0.359 (2.799)	1.441 (3.573)	1.373 (3.540)
Deviance	2853.256	2851.749	2851.649
Reference model		1	2
Fit improvement		$\chi^2 = 1.507$ df = 1 p = n.s.	$\chi^2 = 0.100$ df = 1 p = n.s.

Note. N repeated measures = 398; N pupils = 140; N classes = 18; N schools = 7. gm = grand mean centered. EEH = Early Education at Home. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.3.7. Multi-level Regression – Effect of Change in NPA on Language Development

Model	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*
Fixed part			
Intercept	62.575*** (1.855)	62.692*** (1.886)	62.683*** (1.889)
Time (gm)	7.328*** (0.506)	7.329*** (0.506)	7.299*** (0.507)
Child gender (girl=1)	3.482* (1.491)	3.423 (1.499)	3.430 (1.499)
Child age (gm)	0.597** (0.207)	0.592** (0.207)	0.590** (0.207)
Parent SES (gm)	2.506*** (0.728)	2.495*** (0.728)	2.491*** (0.728)
Parent home language: Dutch and other equal	-8.999*** (2.473)	-9.137*** (2.506)	-9.134*** (2.505)
Parent home language: other	-5.001*** (1.977)	-5.122*** (2.008)	-5.112*** (2.008)
Condition (EEH = 1)	0.143 (1.871)	0.047 (1.898)	0.061 (1.893)
NPA change (gm)		-0.431 (1.303)	-0.405 (1.303)
NPA change (gm) × Time			-0.759 (0.910)
Random part (variances)			
Repeated measures	45.215 (4.792)	45.218 (4.792)	45.060 (4.775)
Pupil	28.312 (7.238)	28.219 (7.224)	28.236 (7.217)
Class	6.200 (6.556)	6.300 (6.591)	6.214 (6.554)
School	5.129 (6.504)	5.072 (6.494)	5.227 (6.550)
Deviance	1948.371	1948.262	1947.569
Reference model		1	2
Fit improvement		$\chi^2 = 0.109$ df = 1 p = n.s.	$\chi^2 = 0.700$ df = 1 p = n.s.

Note. N repeated measures = 276; N pupils = 99; N classes = 18; N schools = 7. gm = grand mean centered. EEH = Early Education at Home. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.3.8. Multi-level Regression – Effects of Enactment on Literacy Development

Model	**1** ***B (SE)***	**2** ***B (SE)***	**3** ***B (SE)***	**4** ***B (SE)***	**5** ***B (SE)***	**6** ***B (SE)***
Fixed part						
Intercept	0.868*** (0.071)	0.864*** (0.071)	0.864*** (0.120)	0.865*** (0.120)	0.834*** (0.123)	0.834*** (0.123)
Child age (gm)	-0.030** (0.011)	-0.030** (0.011)	-0.027** (0.009)	-0.026** (0.009)	-0.027** (0.011)	-0.027** (0.011)
Condition (EEH = 1)	0.041 (0.092)	0.041 (0.092)	0.030 (0.166)	0.032 (0.166)	0.075 (0.172)	0.073 (0.173)
HLE change (gm)		0.152 (0.120)				
PSE change (gm)				-0.041 (0.091)		
NPA change (gm)						-0.007 (0.075)
Random part (variances)						
Pupil	0.122 (0.056)	0.123 (0.056)	0.170 (0.021)	0.170 (0.021)	0.160 (0.024)	0.160 (0.024)
Class	0.165 (0.063)	0.160 (0.063)	0.100 (0.041)	0.100 (0.041)	0.101 (0.044)	0.101 (0.044)
Deviance	231.254	229.660	184.242	184.042	131.125	131.117
Reference model		1		3		5
Fit improvement		$\chi^2 = 1.594$ df = 1 p = n.s.		$\chi^2 = 0.200$ df = 1 p = n.s.		$\chi^2 = 0.008$ df = 1 p = n.s.
N pupils	148	148	144	144	104	104
N classes	18	18	18	18	18	18

Note. gm = grand mean centered. EEH = Early Education at Home. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.3.9. Regression – Effects of Enactment on Vocabulary Development

Model	**1** ***B (SE)***	**2** ***B (SE)***	**3** ***B (SE)***	**4** ***B (SE)***	**5** ***B (SE)***	**6** ***B (SE)***
Intercept	4.302*** (0.478)	4.341*** (0.478)	4.267*** (0.492)	4.266*** (0.492)	4.766*** (0.550)	4.826*** (0.550)
Child age (gm)	-0.282** (0.077)	-0.281** (0.077)	-0.284** (0.078)	-0.288** (0.080)	-0.326** (0.095)	-0.327** (0.094)
Condition (EEH = 1)	0.180 (0.613)	0.179 (0.612)	0.163 (0.629)	0.155 (0.630)	-0.434 (0.733)	-0.568 (0.740)
HLE change (gm)		-0.457 (0.808)				
PSE change (gm)				0.173 (0.783)		
NPA change (gm)						-0.669 (0.641)
Variance	13.036 (1.526)	13.007 (1.522)	13.276 (1.576)	13.271 (1.575)	13.470 (1.868)	13.330 (1.849)
Deviance	789.213	788.894	770.179	770.131	565.584	564.499
Reference model		1		3		5
Fit improvement		$\chi^2 = 0.319$ df = 1 p = n.s.		$\chi^2 = 0.048$ df = 1 p = n.s.		$\chi^2 = 1.085$ df = 1 p = n.s.
N pupils	146	146	142	142	104	104

Note. gm = grand mean centered. EEH = Early Education at Home. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

APPENDIX B.4. PARAMETER ESTIMATES FOR ANALYSES OF INFLUENCE OF RECEIPT VARIABLES (PROGRAM ACTIVITY, ATTENDANCE, DIARIES, AND ACTIVITIES) ON CHILDREN'S LANGUAGE & LITERACY DEVELOPMENT (RESEARCH QUESTION 3)

TABLE B.4.1. Exploration Multi-level Structure – Language Development

Model	**0**	**1**	**2** [a]
Fixed part			
Intercept	45.467 (1.302)	45.384 (1.534)	44.909 (1.582)
Time (gm)	7.527 (0.459)	7.528 (0.459)	7.527 (0.459)
Random part (variances)			
Repeated measures	45.315 (4.357)	45.360 (4.360)	45.366 (4.361)
Pupil	86.827 (13.538)	81.674 (13.365)	81.574 (13.354)
Class		5.790 (6.412)	-
School			-
Deviance	2446.743	2445.946	2445.352
Reference model		0	1
Fit improvement		$\chi^2 = 0.797$ df = 1 *p* = n.s.	$\chi^2 = 0.594$ df = 1 *p* = n.s.

Note. N repeated measures = 335; N pupils = 119; N classes = 9; N schools = 7. gm = grand mean centered. n.s. = non-significant.
[a] This model does not converge fully as for 5 out of 7 schools, there is only one class available for analyses that include receipt variables.

TABLE B.4.2. Multi-level Regression – Predicting Language Development with Program Activity and Attendance Scores

Model	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*	4 *B (SE)*	5 *B (SE)*	6 *B (SE)*
Fixed part						
Intercept	62.827*** (1.520)	62.822*** (1.623)	62.823*** (1.623)	62.437*** (1.579)	61.791*** (1.552)	61.798*** (1.555)
Time	7.563*** (0.670)	7.563*** (0.670)	7.561*** (0.671)	8.161*** (0.567)	8.133*** (0.568)	8.220*** (0.568)
Child gender (girl=1)	4.160* (1.902)	4.164* (1.964)	4.163* (1.964)	3.727 (2.009)	4.281* (1.956)	4.279* (1.960)
Child age (gm)	0.459 (0.309)	0.459 (0.309)	0.459 (0.309)	0.431 (0.270)	0.429 (0.261)	0.433 (0.262)
Parent SES (gm)	3.197* (1.428)	3.193* (1.519)	3.193* (1.519)	2.327* (1.009)	2.342* (0.975)	2.360* (0.977)
Parent home language: Dutch and other equal	-9.975*** (2.836)	-9.964*** (3.120)	-9.964*** (3.120)	-5.405 (2.810)	-4.401 (2.755)	-4.354 (2.761)
Parent home language: other	-6.842* (2.889)	-6.836* (2.986)	-6.837* (2.986)	-6.523* (2.840)	-6.341* (2.745)	-6.261* (2.751)
Program activity (gm)		0.015 (1.766)	0.015 (1.766)			
Program activity (gm) × Time			0.051 (0.977)			
Attendance (gm)					1.051* (0.470)	1.041* (0.471)
Attendance (gm) × Time						-0.370 (0.283)
Random part (variances)						
Repeated measures	46.408 (6.426)	46.408 (6.426)	46.406 (6.425)	47.010 (5.477)	47.204 (5.501)	46.567 (5.428)
Pupil	31.088 (9.262)	31.088 (9.262)	31.090 (9.262)	56.452 (11.830)	51.507 (11.051)	52.001 (11.086)
R^2 Repeated measures Level					--	
R^2 Pupil Level					0.088	
Deviance	1127.487	1127.487	1127.484	1628.285	1623.471	1621.776
Reference model		1	2		4	5
Fit improvement		$\chi^2 = 0.000$ df = 1 p = n.s.	$\chi^2 = 0.003$ df = 1 p = n.s.		$\chi^2 = 4.814$ df = 1 $p < .05$	$\chi^2 = 1.695$ df = 1 p = n.s.
N measurement	160	160	160	226	226	226
N pupils	56	56	56	79	79	79
N classes	9	9	9	9	9	9

Note. gm = grand mean centered. Parent home language reference category = Dutch. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.4.3. Multi-level Regression – Predicting Language Development with Diaries and Activities Scores

Model	7 *B (SE)*	8 *B (SE)*	9 *B (SE)*	10 *B (SE)*	11 *B (SE)*	12 *B (SE)*
Fixed part						
Intercept	62.157 (1.489)	61.935 (1.513)	61.936 (1.513)	62.382 (1.456)	62.340 (1.445)	62.339 (1.444)
Time	7.827*** (0.536)	7.819*** (0.537)	7.834*** (0.547)	7.746*** (0.564)	7.737*** (0.565)	7.732*** (0.567)
Child gender (girl=1)	4.288* (1 .814)	4.265* (1.807)	4.266* (1.807)	4.368* (1.826)	4.209* (1.817)	4.210* (1.817)
Child age (gm)	0.376 (0.246)	0.363 (0.245)	0.363 (0.245)	0.356 (0.243)	0.352 (0.241)	0.352 (0.241)
Parent SES (gm)	2.061* (0.948)	2.077* (0.945)	2.079* (0.945)	2.421* (1.005)	2.578* (1.009)	2.578* (1.009)
Parent home language: Dutch and other equal	-6.361* (2.514)	-6.050* (2.540)	-6.046* (2.541)	-5.163* (2.609)	-4.948 (2.597)	-4.953 (2.597)
Parent home language: other	-5.592* (2.611)	-5.300* (2.631)	-5.293* (2.632)	-7.109** (2.679)	-6.997*** (2.659)	-7.000*** (2.659)
Diaries (gm)		0.309 (0.417)	0.308 (0.417)			
Diaries (gm) × Time			-0.33 (0.247)			
Activities (gm)					0.070 (0.069)	0.070 (0.069)
Activities (gm) × Time						0.005 (0.043)
Random part (variances)						
Repeated measures	47.294 (5.201)	47.334 (5.206)	47.323 (5.205)	48.284 (5.531)	48.385 (5.544)	48.391 (5.544)
Pupil	52.745 (10.647)	52.188 (10.565)	52.210 (10.567)	48.053 (10.429)	46.942 (10.258)	46.916 (10.255)
R^2 Level 1						
R^2 Level 2						
Deviance	1819.168	1818.622	1818.604	1673.247	1672.220	1672.220
Reference model		7	8		10	11
Fit improvement		$\chi^2 = 0.546$ df = 1 p = n.s.	$\chi^2 = 0.018$ df = 1 p = n.s.		$\chi^2 = 1.027$ df = 1 p = n.s.	$\chi^2 = 1.027$ df = 1 p = n.s.
N measurement	253	253	253	233	233	233
N pupils	88	88	88	81	81	81
N classes	9	9	9	9	9	9

Note. gm = grand mean centered. Parent home language reference category = Dutch. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.4.4. Exploration Multi-level Structure – Literacy Development

Model	**0**	**1**	**2**
Fixed part			
Intercept	0.875 (0.055)	0.847 (0.129)	0.823 (0.162)
Random part (variances)			
Pupil	0.350 (0.046)	0.207 (0.028)	0.203 (0.028)
Class		0.132 (0.070)	0.000 (0.000)
School			0.169 (0.099)
Deviance	205.595	164.348	161.081
Reference model		0	1
Fit improvement		$\chi^2 = 41.247$ df = 1 $p < .001$	$\chi^2 = 3.267$ df = 1 $p < .10$

Note. N pupils = 115; N classes = 9; N schools = 7.

TABLE B.4.5. Multi-level Regression – Predicting Literacy Development with Receipt Variables

Model	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*	4 *B (SE)*	5 *B (SE)*	6 *B (SE)*	7 *B (SE)*	8 *B (SE)*
Fixed part								
Intercept	0.911*** (0.079)	0.909*** (0.079)	0.861*** (0.080)	0.861*** (0.081)	0.902*** (0.113)	0.903*** (0.114)	0.901*** (0.066)	0.893*** (0.066)
Child age (gm)	-0.035 (0.022)	-0.032 (0.022)	-0.028 (0.018)	-0.028 (0.018)	-0.047 (0.018)	-0.047 (0.018)	-0.039 (0.017)	-0.039 (0.017)
Parent SES (gm)	0.262* (0.108)	0.315** (0.117)	0.017 (0.055)	0.017 (0.055)	0.048 (0.044)	0.050 (0.044)	0.079 (0.060)	0.100 (0.067)
Program activity (gm)		-0.136 (0.137)						
Attendance (gm)				-0.001 (0.036)				
Diaries (gm)						-0.005 (0.022)		
Activities (gm)								0.006 (0.005)
Random part (variances)								
Pupil	0.179 (0.085)	0.167 (0.079)	0.130 (0.032)	0.130 (0.032)	0.165 (0.027)	.0164 (0.027)	0.278 (0.113)	0.294 (0.116)
School	0.148 (0.096)	0.157 (0.092)	0.214 (0.067)	0.214 (0.067)	0.157 (0.071)	0.160 (0.072)	0.073 (0.110)	0.054 (0.111)
Deviance	97.818	96.850	125.112	125.112	122.123	122.067	150.076	147.784
Reference model		1		3		5		7
Fit improvement		$\chi^2 = 0.968$ df = 1 *p* = n.s.		$\chi^2 = 0.000$ df = 1 *p* = n.s.		$\chi^2 = 0.058$ df = 1 *p* = n.s.		$\chi^2 = 2.292$ df = 1 *p* = n.s.
N pupils	58	58	82	82	92	92	84	84
N classes	9	9	9	9	9	9	9	9

Note. gm = grand mean centered. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.4.6. Exploration Multi-level Structure – Vocabulary Development

Model	0	1	2
Fixed part			
Intercept	4.430 (0.354)	4.561 (0.470)	4.451 (0.547)
Random part (variances)			
Pupil	14.236 (1.889)	13.418 (1.849)	13.242 (1.808)
Class		0.861 (0.932)	0.000 (0.000)
School			1.142 (1.094)
Deviance	626.489	624.745	623.835
Reference model		0	1
Fit improvement		$\chi^2 = 1.744$ df = 1 *p* = n.s.	$\chi^2 = 0.91$ df = 1 *p* = n.s.

Note. N pupils = 114; N classes = 9; N schools = 7. n.s. = non-significant.

TABLE B.4.7. Regression – Predicting Vocabulary Development with Receipt Variables

Model	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*	4 *B (SE)*	5 *B (SE)*	6 *B (SE)*	7 *B (SE)*	8 *B (SE)*
Intercept	4.797*** (0.471)	4.797*** (0.471)	4.309*** (0.379)	4.321*** (0.379)	4.430*** (0.354)	4.429*** (0.354)	4.404*** (0.380)	4.391*** (0.380)
Program activity (gm)		0.117 (0.710)						
Attendance (gm)				-0.140 (0.148)				
Diaries (gm)						0.008 (0.149)		
Activities (gm)								0.020 (0.029)
Variance	15.292 (2.604)	15.286 (2.602)	13.966 (2.005)	13.921 (1.999)	14.263 (1.889)	14.262 (1.889)	14.301 (2.033)	14.233 (2.023)
Deviance	384.000	383.973	531.028	530.712	626.489	626.487	544.325	543.847
Reference model		1		3		5		7
Fit improvement		$\chi^2 =$ 0.027 df = 1 *p* = n.s.		$\chi^2 =$ 0.316 df = 1 *p* = n.s.		$\chi^2 =$ 0.002 df = 1 *p* = n.s.		$\chi^2 =$ 0.478 df = 1 *p* = n.s.
N Pupils	69	69	97	97	114	114	99	99

Note. gm = grand mean centered. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

APPENDIX B.5. PARAMETER ESTIMATES FOR INFLUENCE OF PARENT SES, HOME LANGUAGE, AND ETHNIC-MINORITY STATUS ON IMPLEMENTATION QUALITY (RESEARCH QUESTION 4)

TABLE B.5.1. Exploration Multi-level Structure – Attendance

Model	0	1	2
Fixed part			
Intercept	4.969 (0.208)	4.869 (0.357)	4.696 (0.433)
Random part (variances)			
Pupil	4.234 (0.605)	3.513 (0.527)	3.447 (0.511)
Class		0.818 (0.541)	0.000 (0.000)
School			1.019 (0.699)
Deviance	419.535	412.534	410.284
Reference model		0	1
Fit improvement		$\chi^2 = 7.001$ df = 1 $p < .01$	$\chi^2 = 2.25$ df = 1 p = n.s.

Note. N pupils = 98; N classes = 9; N schools = 7. n.s. = non-significant.

TABLE B.5.2. Exploration Multi-level Structure – Diaries

Model	0	1	2
Fixed part			
Intercept	4.328 (0.219)	4.353 (0.415)	4.353 (0.415)
Random part (variances)			
Pupil	5.699 (0.739)	4.429 (0.597)	4.429 (0.597)
Class		1.179 (0.727)	1.179 (0.727)
School			0.000 (0.000)
Deviance	544.809	527.955	527.955
Reference model		0	1
Fit improvement		$\chi^2 = 16.854$ df = 1 $p < .001$	$\chi^2 = 0.000$ df = 1 p = n.s.

Note. N pupils = 119; N classes = 9; N schools = 7. n.s. = non-significant.

TABLE B.5.3. Exploration Multi-level Structure – Activities

Model	**0**	**1**	**2**
Fixed part			
Intercept	33.838 (1.341)	33.757 (1.835)	33.757 (1.835)
Random part (variances)			
Pupil	177.974 (25.296)	164.383 (24.454)	164.383 (24.454)
Class		14.258 (14.120)	14.258 (14.120)
School			0.000 (0.000)
Deviance	793.932	791.947	791.947
Reference model		0	1
Fit improvement		$\chi^2 = 1.985$ df = 1 *p* = n.s.	$\chi^2 = 0$ df = 1 *p* = n.s.

Note. N pupils = 99; N classes = 9; N schools = 7. n.s. = non-significant.

TABLE B.5.4. Exploration Multi-level Structure – Mean Program Activity

Model	**0**	**1**	**2**
Fixed part			
Intercept	2.766 (0.082)	2.780 (0.102)	2.730 (0.107)
Random part (variances)			
Pupil	0.445 (0.077)	0.410 (0.076)	0.405 (0.074)
Class		0.037 (0.044)	0.000 (0.000)
School			0.035 (0.042)
Deviance	135.898	134.923	133.742
Reference model		0	1
Fit improvement		$\chi^2 = 0.975$ df = 1 *p* = n.s.	$\chi^2 = 1.181$ df = 1 *p* = n.s.

Note. N pupils = 67; N classes = 9; N schools = 7. n.s. = non-significant.

TABLE B.5.5. Multi-level Regression – Predicting Attendance with Parent Background Variables

Model	0 *B (SE)*	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*
Fixed part				
Intercept	4.696*** (0.433)	4.696*** (0.433)	4.976*** (0.476)	4.725*** (0.468)
Parent SES (gm)		0.007 (0.184)		
Parent home language: Dutch and other equal			-0.803 (0.557)	
Parent home language: other			-0.592 (0.483)	
Parent ethnic-minority status (ethnic-minority=1)				-0.074 (0.433)
Random part (variances)				
Pupil	3.447 (0.511)	3.447 (0.511)	3.331 (0.494)	3.444 (0.510)
School	1.020 (0.700)	1.019 (0.700)	1.089 (0.731)	1.029 (0.705)
Deviance	410.284	410.283	407.490	410.255
Reference model		0	0	0
Fit improvement		$\chi^2 = 0.001$ df = 1 *p* = n.s.	$\chi^2 = 2.794$ df = 2 *p* = n.s.	$\chi^2 = 0.029$ df = 1 *p* = n.s.
N Pupil	98	98	98	98
N School	7	7	7	7

Note. gm = grand mean centered. Parent home language reference category = Dutch. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.5.6. Multi-level Regression – Predicting Diaries with Parent Background Variables

Model	0 *B (SE)*	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*
Fixed part				
Intercept	4.350*** (0.415)	4.347*** (0.414)	4.648*** (0.424)	4.394*** (0.440)
Parent SES (gm)		0.108 (0.182)		
Parent home language: Dutch and other equal			-0.362 (0.579)	
Parent home language: other			-0.998 (0.492)	
Parent ethnic-minority status (ethnic-minority=1)				-0.122 (0.448)
Random part (variances)				
Pupil	4.174 (0.582)	4.163 (0.580)	4.055 (0.565)	4.179 (0.582)
Class	1.192 (0.728)	1.179 (0.722)	1.033 (0.652)	1.155 (0.715)
Deviance	491.235	490.884	487.229	491.164
Reference model		0	0	0
Fit improvement		$\chi^2 = 0.351$ df = 1 p = n.s.	$\chi^2 = 4.006$ df = 2 p = n.s.	$\chi^2 = 0.71$ df = 1 p = n.s.
N Pupils	112	112	112	112
N Classes	9	9	9	9

Note. gm = grand mean centered. Parent home language reference category = Dutch. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.5.7. Regression – Predicting Activities with Parent Background Variables

Model	0 *B (SE)*	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*
Intercept	33.838 (1.341)	33.974 (1.337)	34.047 (1.667)	33.246 (1.652)
Parent SES (gm)		-1.452 (1.242)		
Parent home language: Dutch and other equal			-0.190 (3.935)	
Parent home language: other			-0.856 (3.354)	
Parent ethnic-minority status (ethnic-minority=1)				1.724 (2.818)
Variance	177.974 (25.296)	175.550 (24.952)	177.857 (25.279)	177.303 (25.201)
Deviance	793.932	792.575	793.867	793.558
Reference model		0	0	0
Fit improvement		$\chi^2 = 1.357$ df = 1 *p* = n.s.	$\chi^2 = 0.065$ df = 1 *p* = n.s.	$\chi^2 = 0.374$ df = 1 *p* = n.s.
N Pupil	99	99	99	99

Note. gm = grand mean centered. Parent home language reference category = Dutch. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.5.8. Exploration Multi-level Structure – Change in HLE

Model	0	1	2
Fixed part			
Intercept	-0.054 (0.027)	-0.059 (0.029)	-0.059 (0.029)
Random part (variances)			
Pupil	0.127 (0.014)	0.121 (0.015)	0.121 (0.015)
Class		0.006 (0.008)	0.006 (0.008)
School			0.000 (0.000)
Deviance	136.863	136.377	136.377
Reference model		0	1
Fit improvement		$\chi^2 = 0.486$ df = 1 *p* = n.s.	$\chi^2 = 0$ df = 1 *p* = n.s.

Note. N pupils = 176; N classes = 18; N schools = 7. n.s. = non-significant.

TABLE B.5.9. Exploration Multi-level Structure – Change in PSE

Model	**0**	**1**	**2**
Fixed part			
Intercept	-0.026 (0.032)	-0.025 (0.034)	-0.018 (0.038)
Random part (variances)			
Pupil	0.176 (0.019)	0.171 (0.021)	0.169 (0.019)
Class		0.006 (0.011)	0.000 (0.000)
School			0.007 (0.009)
Deviance	190.574	190.433	188.842
Reference model		0	1
Fit improvement		$\chi^2 = 0.141$ df = 1 *p* = n.s.	$\chi^2 = 1.591$ df = 1 *p* = n.s.

Note. N pupils = 173; N classes = 18; N schools = 7. n.s. = non-significant.

TABLE B.5.10. Exploration Multi-level Structure – Change in NPA

Model	**0**	**1**	**2**
Fixed part			
Intercept	-0.156 (0.052)	-0.156 (0.052)	-0.156 (0.052)
Random part (variances)			
Pupil	0.339 (0.043)	0.339 (0.043)	0.339 (0.043)
Class		0.000 (0.000)	0.000 (0.000)
School			0.000 (0.000)
Deviance	217.579	217.579	217.579
Reference model		0	1
Fit improvement		$\chi^2 = 0$ df = 1 *p* = n.s.	$\chi^2 = 0$ df = 1 *p* = n.s.

Note. N pupils = 124; N classes = 18; N schools = 7. n.s. = non-significant.

TABLE B.5.11. Regression – Predicting Change in HLE with Parent Background Variables

Model	0 *B (SE)*	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*
Intercept	-0.054 (0.027)	-0.055 (0.027)	-0.014 (0.033)	-0.045 (0.033)
Parent SES (gm)		0.029 (0.025)		
Parent home language: Dutch and other equal			-0.139 (0.081)	
Parent home language: other			-0.091 (0.064)	
Parent ethnic-minority status (ethnic-minority=1)				-0.024 (0.056)
Variance	0.127 (0.014)	0.126 (0.013)	0.125 (0.013)	0.127 (0.014)
Deviance	136.863	135.469	132.799	136.680
Reference model		0	0	0
Fit improvement		$\chi^2 = 1.394$ df = 1 p = n.s.	$\chi^2 = 4.064$ df = 2 p = n.s.	$\chi^2 = 0.183$ df = 1 p = n.s.

Note. N = 176. gm = grand mean centered. Parent home language reference category = Dutch. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.5.12. Regression – Predicting Change in PSE with Parent Background Variables

Model	0 *B (SE)*	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*
Intercept	-0.026 (0.032)	-0.025 (0.032)	-0.027 (0.039)	-0.012 (0.039)
Parent SES (gm)		-0.009 (0.031)		
Parent home language: Dutch and other equal			-0.103 (0.095)	
Parent home language: other			0.068 (0.078)	
Parent ethnic-minority status (ethnic-minority=1)				-0.043 (0.067)
Variance	0.176 (0.019)	0.176 (0.019)	0.174 (0.019)	0.176 (0.019)
Deviance	190.574	190.490	188.154	190.171
Reference model		0	0	0
Fit improvement		$\chi^2 = 0.084$ df = 1 p = n.s.	$\chi^2 = 2.42$ df = 2 p = n.s.	$\chi^2 = 0.403$ df = 1 p = n.s.

Note. N = 173. gm = grand mean centered. Parent home language reference category = Dutch. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE B.5.13. Regression – Predicting Change in NPA with Parent Background Variables

Model	**0** ***B (SE)***	**1** ***B (SE)***	**2** ***B (SE)***	**3** ***B (SE)***
Intercept	-0.156 (0.052)	-0.154 (0.052)	-0.108 (0.065)	-0.111 (0.066)
Parent SES (gm)		-0.018 (0.050)		
Parent home language: Dutch and other equal			-0.118 (0.168)	
Parent home language: other			-0.142 (0.124)	
Parent ethnic-minority status (ethnic-minority=1)				-0.121 (0.108)
Variance	0.339 (0.043)	0.338 (0.043)	0.334 (0.042)	0.335 (0.043)
Deviance	217.579	217.447	216.036	216.317
Reference model		0	0	0
Fit improvement		$\chi^2 = 0.132$ df = 1 p = n.s.	$\chi^2 = 1.543$ df = 2 p = n.s.	$\chi^2 = 1.262$ df = 1 p = n.s.

Note. N = 124. gm = grand mean centered. Parent home language reference category = Dutch. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

APPENDIX C. SUPPLEMENTARY MATERIALS FOR CHAPTER 4 AND 5

Appendix C.1. Example of a prompting board activity from the Early Education at Home program (NJi, 2014)

Appendix C.2. Coding scheme based on Van Kleeck et al. (1997), Sorsby and Martlew (1991) and Blank, Rose, and Berlin (1978a, 1978b)

Communicative functions:

1. Content-related speech
2. Feedback & Acknowledgement
3. Procedural
4. Off-task
5. Ambiguous
6. Inaudible

1. Content-related speech: Levels of abstraction

Level I: Matching Perception. This category includes questions and comments that require the child to attend to information that is perceptually present.

Level of abstraction	Explanation	Examples
1 A Label	Saying or asking about the name of an object or person. Drawing the child's attention to pictured items and characters by pointing or naming.	"What is this?" "A chestnut."
1 B Locate	Asking the child to identify a named object. Describing the location of an object or character.	"Where is the dragon?" "He is hanging from a tree."
1 C Notice	Directing the child's attention to pictured objects without naming them.	"See?" "Look at this!" "What do you see?"

Level II: Selective Analysis/Integration of Perception. These questions or comments require the child to focus on specific aspects of objects.

Level of abstraction	Explanation	Examples
2 A Describe characteristics	Focusing on attributes such as the color or size of objects and noticing parts of objects or characters. Counting. Reading the title of the story. Characters' names.	"He is wearing glasses." "How many mice do you see?" "This is Boris."
2 B Describe scene	Describing actions. Talking about what is going on in the picture. Discussing a change in emotions experienced by characters.	"What is the squirrel doing?" "The dragon breathes fire."

Level III: Reorder/Infer about Perception. This category includes questions or comments that require the child to process information that is not perceptually present or to reorder or restructure perceptually present perceptions.

Level of abstraction	Explanation	Examples
3 A Summarizing and integrating	Questions and comments in which the reader summarizes parts of the story or discusses past events. Integrating different images depicted on the prompting board.	"What did Boris and Katinka do?" "They went to a farm and fed the baby goats and then he ate the coat."
3 B Define	Questions and comments that focus on word meaning. Explaining the meaning of a word or asking the child what it means.	"Can you tell me what a dragon is?
3 C Identify Similarities and Differences	Questions and comments that focus on similarities and differences between pictured objects or between story elements and the child's life.	"Just like at grandma's!" "Can you ride a bike as well?"
3 D Make Judgments	Making personal judgments about characters, ideas, or objects.	"Gross, a cake made out of spiders!"

Level IV: Reasoning about Perception. This level is the most complex level and requires the child to reason.

Level of abstraction	Explanation	Examples
4 A Predict	Making predictions about what will happen next or hypothesizing about the outcome of an event.	"I think the girl is going to eat the cake." "If they give the owl a piece of pie, how would that make him feel?"
4 B Explain	Explaining concepts and actions.	"Which season do you think it is?" "I think it is summer" "The birds are migrating before winter comes, because it will be too cold for them and they won't be able to find enough food, that's why there leaving."

2. Feedback & Acknowledgement (Joyner, 2014)

Explanation	Examples
Provide praise, positive or negative feedback. Confirmation of acknowledgement of child's verbal and non-verbal participation. Asking for clarification. Pausing to think	"Look carefully" "I don't know..." "Well done!" "Let's finish this first and after you can go play, okay?" "What did you say?" "Erm… let's have a look."

3. Procedural

Explanation	Examples
Utterances that refer to how to deal with the activity at hand Duration of the activity and parent and child taking turns. *Prompting board:* utterances regarding what parent expects from the child during discussion of the prompting board *Shared reading:* print and book conventions	"We are going to look at the pictures and then you can tell mommy what you see, okay?" "Now it's my turn." "Let's have a look at the cover first and then we can read the story." "Here it says who did the illustrations" "This is the cover of the book."

4. Off-task

Explanation	Examples
Off task utterances include any remarks that show the child is preoccupied with something other than the offered task.	"Look the other kids are playing outside" "I want to play with the tablet"

5. Ambiguous

The 'ambiguous' category consists of utterances of which coders could not tell in which category the utterance was best at place.

6. Inaudible

APPENDIX C.3. EXPLORATION OF MULTI-LEVEL STRUCTURES FOR PARENT-CHILD UTTERANCES ACROSS LEVELS OF ABSTRACTION (CHAPTER 5)

TABLE C.3.1. Exploration Multi-level Structure – Level I

Model	0 *B (SE)*	1 *B (SE)*	2 *B (SE)*
Fixed part			
Intercept	7.875 (0.583)	7.875 (0.583)	7.875 (0.589)
Random part (variances)			
Activity	59.734 (6.368)	59.734 (6.368)	59.269 (7.296)
Dyad-member		0.000 (0.000)	0.000 (0.000)
Dyad			0.465 (3.734)
Deviance	1219.290	1219.290	1219.274
Reference model		0	1
Fit improvement		$\chi^2 = 0$ df = 1 p = n.s.	$\chi^2 = 0.016$ df = 1 p = n.s.

Note. N Activities = 176; N Dyad-members = 88; N Dyads = 44. n.s. = non-significant.

TABLE C.3.2. Exploration Multi-level Structure – Level II

Model	0 *B (SE)*	1 *B (SE)*	2 *B (SE)*
Fixed part			
Intercept	11.898 (0.601)	11.898 (0.601)	11.898 (0.719)
Random part (variances)			
Activity	63.649 (6.785)	63.649 (6.785)	54.538 (6.713)
Dyad-member		0.000 (0.000)	0.000 (0.000)
Dyad			9.111 (5.132)
Deviance	1230.461	1230.461	1225.789
Reference model		0	1
Fit improvement		$\chi^2 = 0$ df = 1 p = n.s.	$\chi^2 = 4.672$ df = 1 $p < .05$

Note. N Activities = 176; N Dyad-members = 88; N Dyads = 44. n.s. = non-significant.

TABLE C.3.3. Exploration Multi-level Structure – Level III

Model	0 *B (SE)*	1 *B (SE)*	2 *B (SE)*
Fixed part			
Intercept	11.324 (0.748)	11.324 (0.808)	11.324 (1.068)
Random part (variances)			
Activity	98.537 (10.504)	82.176 (12.389)	64.509 (7.941)
Dyad-member		16.361 (10.648)	0.000 (0.000)
Dyad			34.028 (10.876)
Deviance	1307.383	1304.923	1282.748
Reference model		0	1
Fit improvement		$\chi^2 = 2.46$ df = 1 *p* = n.s.	$\chi^2 = 22.175$ df = 1 *p* < .001

Note. N Activities = 176; N Dyad-members = 88; N Dyads = 44. n.s. = non-significant.

TABLE C.3.4. Exploration Multi-level Structure – Level IV

Model	0 *B (SE)*	1 *B (SE)*	2 *B (SE)*
Fixed part			
Intercept	6.341 (0.466)	6.341 (0.534)	6.341 (0.731)
Random part (variances)			
Activity	38.270 (4.080)	26.443 (3.986)	19.716 (2.427)
Dyad-member		11.827 (4.270)	0.000 (0.000)
Dyad			18.554 (5.043)
Deviance	1140.928	1132.095	1092.888
Reference model		0	1
Fit improvement		$\chi^2 = 8.833$ df = 1 *p* < .005	$\chi^2 = 39.207$ df = 1 *p* < .001

Note. N Activities = 176; N Dyad-members = 88; N Dyads = 44.

APPENDIX D. SUPPLEMENTARY MATERIALS FOR CHAPTER 6

Appendix D.1. Parameter estimates for moderation analyses of EEH-effects by parent background characteristics (SES, ethnic-minority status, home language)

TABLE D.1. Multi-level Regression – Testing for Moderation of EEH Effect on Language Development by Parent Background

Model	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*	4 *B (SE)*
Fixed part				
Intercept	61.467*** (1.552)	61.464*** (1.548)	62.102*** (1.663)	61.789*** (1.655)
Time	7.554*** (0.619)	7.547*** (0.617)	6.566*** (0.789)	6.711*** (0.766)
Child gender (girl=1)	4.132** (1.305)	4.156** (1.303)	4.209** (1.307)	4.185** (1.301)
Child age (gm)	0.446** (0.175)	0.447** (0.174)	0.455** (0.175)	0.442** (0.174)
Parent SES (gm)	2.089** (0.764)	2.487** (0.939)	2.058** (0.761)	1.885* (0.780)
Parent home language: Dutch and other equal	-7.243*** (2.158)	-7.155*** (2.158)	-7.546*** (2.631)	-11.019*** (3.717)
Parent home language: other	-5.292** (1.795)	-5.405** (1.796)	-5.591** (2.652)	-5.394* (2.439)
Condition (EEH=1)	0.547 (1.297)	0.552 (1.295)	-0.536 (1.638)	0.045 (1.603)
Condition × Time	0.117 (0.811)	0.118 (0.810)	1.066 (1.013)	0.730 (1.003)
Time × SES		0.054 (0.520)		
Condition × SES		-0.820 (1.143)		
Condition × Time × SES		-0.619 (0.716)		
Parent ethnic-minority status (ethnic-minority=1)			-1.243 (3.075)	
Time × Ethnic-minority status			2.483 (1.256)	
Condition × Ethnic-minority status			3.107 (2.770)	

Model	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*	4 *B (SE)*
Condition × Time × Ethnic-minority status			-2.366 (1.675)	
Time × Home language: Dutch and other equal				2.602 (2.170)
Time × Home language: other				2.224 (1.405)
Condition × Home language: Dutch and other equal				5.384 (4.316)
Condition × Home language: other				-0.329 (3.184)
Condition × Time × Home language: Dutch and other equal				-3.135 (2.605)
Condition × Time × Home language: other				-0.572 (1.948)
Random part (variances)				
Repeated measures	44.732 (3.781)	44.540 (3.765)	44.023 (3.721)	43.798 (3.702)
Pupil	40.722 (7.252)	40.586 (7.223)	41.446 (7.287)	40.311 (7.160)
Class	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
School	12.071 (6.896)	11.937 (6.857)	10.270 (6.315)	12.849 (7.143)
Deviance	3071.866	3070.020	3066.605	3064.921
Reference model		1	1	1
Fit improvement		$\chi^2 = 1.846$ df = 3 p = n.s.	$\chi^2 = 5.261$ df =4 p = n.s.	$\chi^2 = 6.945$ df = 6 p = n.s.

Note. N repeated measures = 43; N pupils =152; N classes = 18; N schools = 7. gm = grand mean centered. Parent home language reference category = Dutch. EEH = Early Education at Home. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE D.2. Multi-level Regression – Testing for Moderation of the EEH Effect on Literacy Development by Parent Background

Model	1 *B (SE)*	2 *B (SE)*	3 *B (SE)*	4 *B (SE)*
Fixed part				
Intercept	0.847*** (0.084)	0.853*** (0.085)	0.726*** (0.101)	0.774*** (0.101)
Child age (gm)	-0.030** (0.010)	-0.030** (0.010)	-0.029** (0.010)	-0.029** (0.010)
Condition (EEH=1)	0.037 (0.114)	0.043 (0.114)	0.198 (0.131)	0.102 (0.135)
Parent SES (gm)		0.021 (0.060)		
Condition × SES		0.032 (0.085)		
Parent ethnic-minority status (ethnic-minority=1)			0.269 (0.136)	
Condition × Ethnic-minority status			-0.380 (0.178)	
Parent home language: Dutch and other equal				0.354 (0.231)
Parent home language: other				0.107 (0.153)
Condition × Home language: Dutch and other equal				-0.400 (0.278)
Condition × Home language: other				-0.042 (0.209)
Random part (variances)				
Pupil	0.186 (0.026)	0.186 (0.026)	0.184 (0.026)	0.183 (0.026)
Class	0.094 (0.034)	0.090 (0.033)	0.083 (0.032)	0.091 (0.033)
Deviance	219.002	218.127	214.276	216.197
Reference model		1	1	1
Fit improvement		$\chi^2 = 0.875$ df = 2 p = n.s.	$\chi^2 = 4.726$ df = 2 p = n.s.	$\chi^2 = 2.805$ df = 4 p = n.s.

Note. N pupils = 151; N classes = 18; N schools = 7. gm = grand mean centered. EEH = Early Education at Home. n.s. = non-significant. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE D.3. Regression – Testing for Moderation of the EEH Effect on Vocabulary Development by Parent Background

Model	**1** ***B (SE)***	**2** ***B (SE)***	**3** ***B (SE)***	**4** ***B (SE)***
Intercept	4.379*** (0.477)	4.370*** (0.472)	3.793*** (0.596)	3.814*** (0.576)
Child age (gm)	-0.210* (0.080)	-0.211* (0.079)	-0.184* (0.079)	-0.192* (0.078)
Condition (EEH=1)	0.050 (0.629)	0.063 (0.622)	0.088 (0.769)	0.090 (0.758)
Parent SES (gm)		-0.673 (0.388)		
Condition × SES		0.418 (0.542)		
Parent ethnic-minority status (ethnic-minority=1)			1.518 (0.965)	
Condition × Ethnic-minority status			0.191 (1.285)	
Parent home language: Dutch and other equal				1.446 (1.640)
Parent home language: other				1.663 (1.092)
Condition × Home language: Dutch and other equal				-1.329 (1.961)
Condition × Home language: other				0.938 (1.490)
Variance	14.312 (1.658)	13.986 (1.620)	13.722 (1.590)	13.459 (1.559)
Deviance	819.348	815.916	813.079	810.186
Reference model		1	1	1
Fit improvement		$\chi^2 = 3.432$ df = 2 p = n.s.	$\chi^2 = 6.269$ df = 2 $p < .05$	$\chi^2 = 9.162$ df = 4 p = n.s.

Note. N = 149 gm = grand mean centered. EEH = Early Education at Home. n.s. = non-significant.* $p < .05$; ** $p < .01$; *** $p < .001$.

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SAMENVATTING

Summary in Dutch

In veel landen is het stimuleren van geletterde vaardigheden bij kinderen die het risico lopen op een onderwijsachterstand een beleidsprioriteit (Carpentieri et al., 2011; OECD, 2017; Kober, 2001). Met Family Literacy Programs—in het Nederlands gezinsprogramma's of ouder-kind programma's—wordt geprobeerd de geletterde ontwikkeling van jonge kinderen te ondersteunen via het stimuleren van het geletterde gezinsklimaat. Meestal richten deze programma's zich op ouders met een laag opleidingsniveau en een migratieachtergrond. De effecten van gezinsprogramma's zijn onderzocht in een groot aantal effectstudies, die zijn samengevat in recente overzichtsstudies (Manz et al., 2010; Mol et al., 2008; Van Steensel et al., 2011, 2012). Over het algemeen blijken gezinsprogramma's effectief, maar de effectgroottes van de onderzochte programma's lopen behoorlijk uiteen. In het bijzonder voor kinderen van laag opgeleide ouders en kinderen van ouders die tot een etnische minderheid behoren blijken gezinsprogramma's (met name voorleesprogramma's) niet tot weinig effectief (Manz et al., 2010; Mol et al., 2008; Van Steensel et al., 2012). In de literatuur wordt gesuggereerd dat variatie in implementatiekwaliteit (ten dele) verantwoordelijk is voor de gevonden verschillen in effectiviteit. Het is maar de vraag of ouders met een laag opleidingsniveau, al dan niet in combinatie met een etnische minderheidsstatus, deze programma's optimaal (kunnen) uitvoeren. In andere vakgebieden is vaker aangetoond dat implementatiekwaliteit een belangrijke voorspeller is van programma-effecten (Durlak & DuPre, 2008). Ook voor gezinsprogramma's lijkt implementatiekwaliteit van belang, onder meer omdat aan veel van deze programma's een gefaseerd ontwerp ten grondslag ligt. Trainers worden getraind om het programma over te dragen op ouders en deze voeren het programma met hun kinderen uit. Het is daarom opvallend dat er tot nu toe weinig aandacht is geschonken aan dit onderwerp in overzichtsstudies van effectstudies naar deze programma's (Manz et al., 2010; Mol et al., 2008; Van Steensel et al., 2012).

Tegen deze achtergrond zijn er in dit promotieonderzoek vier studies verricht. De eerste studie betreft een review van de literatuur over implementatiekwaliteit van gezinsprogramma's, met als doel inzicht te krijgen in de manier waarop programma-implementatie in effectstudies tot nu toe is gemeten. Daarnaast is bekeken wat eerder onderzoek laat zien aan systematische verschillen in de implementatie van dergelijke programma's. Ten slotte is nagegaan wat er bekend is over de relatie tussen implementatie en programma-effecten. In de tweede studie is de implementatiekwaliteit van een Nederlands programma onderzocht—VVE Thuis voor kleuters (Nederlands Jeugdinstituut, 2014)—en is voor dit programma het verband onderzocht tussen implementatiekwaliteit en effecten. In het licht van de hypothese die in de literatuur is opgeworpen met

betrekking tot implementatiekwaliteit door lager opgeleide ouders, en onze verwachting dat programma's gebaseerd op de cultuur van de meerderheid, overgedragen in de meerderheidstaal, mogelijk niet goed aansluiten bij ouders met een migratieachtergrond en een andere thuistaal, zijn de relaties tussen deze achtergrondkenmerken van ouders en implementatiekwaliteit geanalyseerd. In de derde en vierde studie is diepgaander gekeken naar ouder-kind interacties tijdens activiteiten die worden gebruikt in ouder-kind programma's zoals VVE Thuis. We vergeleken een prototypische geletterde activiteit, het voorlezen van een verhaaltje, met een zogenaamde 'praatplaat'. Een praatplaat bestaat uit een complexe afbeelding waarop zich, binnen een bepaald thema, allerlei gebeurtenissen afspelen. Praatplaten worden tijdens programma's zoals VVE Thuis ingezet om taal aan het kind te ontlokken (zie Appendix C.1 voor een voorbeeld). De observaties van ouder-kind interacties tijdens deze twee activiteiten verschaften inzicht in de manier waarop doelgroep ouders reageren op verschillende activiteiten die in gezinsprogramma's worden aangeboden. Uit de literatuur is bekend dat lage-SES ouders over het algemeen minder stimulerende interacties laten zien dan hoge-SES ouders. Daarbij lijkt er wel sprake van een interactie-effect tussen type activiteit en SES. Eerder onderzoek liet bijvoorbeeld zien dat voorlezen leidt tot kleinere SES-verschillen in interacties dan activiteiten die gericht zijn op fysieke manipulatie, zoals spelen met speelgoed (Dunn, Wooding, & Hermann, 1977; Hoff-Ginsberg, 1991; Snow et al., 1976). Naar aanleiding van deze eerdere bevindingen is bekeken of voorlezen en praatplaten verschillen in de typen ouder-kindinteracties die ze uitlokken en of de relatie tussen het opleidingsniveau van ouders en de interactiekwaliteit anders is in de ene dan in de andere activiteit. Hieronder zullen de belangrijkste bevindingen uit de vier studies worden samengevat.

BELANGRIJKSTE BEVINDINGEN

In de reviewstudie zijn substantiële verschillen gevonden tussen de geanalyseerde effectstudies met betrekking tot de mate waarin er aandacht werd besteed aan de drie elementen van implementatiekwaliteit zoals onderscheiden door Powell en Carey (2012): 'delivery' (kenmerken van de programmaoverdracht door trainers), 'receipt' (kenmerken van de programmadeelname door ouders), en 'enactment' (transfer van programma-inhoud naar het dagelijks leven). Er zijn geen studies gevonden waarin alle relevante aspecten van implementatiekwaliteit tezamen worden bekeken. In het bijzonder werd weinig aandacht besteed aan 'delivery'. Onderzoekers gaan er doorgaans blijkbaar vanuit dat programma's getrouw worden overgedragen van trainers naar ouders, zonder dit daadwerkelijk te meten. Verder werd frequent gebruik gemaakt van zelfrapportage om implementatiekwaliteit

te meten, wat vanwege het risico op sociaal wenselijk antwoorden de betrouwbaarheid van metingen over het algemeen niet ten goede komt. Hoewel veel studies op basis van beschikbare gegevens een goede implementatiekwaliteit lieten zien, duiden enkele studies op potentiële risico's bij programma-uitvoering: zo was er in sommige programma's sprake van hoge uitval en lage opkomst bij trainingsbijeenkomsten. Dit was relatief vaak het geval voor ouders met een lage SES en ouders die tot een etnische minderheid behoren. Relaties tussen implementatiekwaliteit en programma effecten werden meestal niet onderzocht, en wanneer dit wel het geval was, gaven bevindingen geen eenduidig beeld.

In de tweede studie zijn implementatiekwaliteit en effecten onderzocht van VVE Thuis, een Nederlands gezinsprogramma. Uit analyses bleken geen hoofdeffecten van de interventie op de vaardigheden van kinderen. Ook waren er geen indicaties dat het programma veranderingen bij ouders teweegbracht: effecten op ontwikkelingen in de frequentie van geletterde ouder-kindactiviteiten en de kwaliteit van interacties tijdens geletterde activiteiten ontbraken. Ook waren er geen effecten op het vertrouwen van ouders in hun vermogen de schoolse ontwikkeling van hun kind te ondersteunen. Verscheidene maten voor implementatiekwaliteit (opkomst bij ouderbijeenkomsten, uitvoering van programma-activiteiten zoals gemeten aan de hand van dagboekjes, en kwaliteit van ondersteuning en taalaanbod van de ouder tijdens een programma-activiteit) lieten geen relaties zien met de ontwikkeling van kinderen. Achtergrondkenmerken zoals SES, etnische minderheidsstatus, en de moedertaal van ouders waren niet gerelateerd aan kwantitatieve, maar wel aan kwalitatieve aspecten van programma-implementatie. Zo waren de kwaliteit van de ondersteuning en het taalaanbod van ouders tijdens een programma-activiteit lager bij ouders met een lager opleidingsniveau, ouders met een etnische minderheidsstatus, en ouders met een andere moedertaal dan Nederlands. Er waren geen relaties tussen achtergrondkenmerken en veranderingen in enactment (kwaliteit van ondersteuning en taalaanbod van de ouder tijdens een niet-programma-activiteit, frequentie van geletterde ouder-kindactiviteiten) gedurende het interventiejaar.

Uit de vergelijking van interacties tijdens praatplaten en verhaaltjes (Hoofdstuk 4 en 5) kwamen grote verschillen tussen ouder-kindparen naar voren in lengte van de gesprekjes en gebruik van abstracte taal (gesprekjes over onderwerpen buiten het hier en nu). Daarnaast droegen kinderen meer bij aan praatplaatdiscussies dan aan gesprekjes tijdens de voorleesactiviteit. Tijdens praatplaatactiviteiten werden vaker inferenties gemaakt, en werd ook vaker gelabeld, opgemerkt, en gelokaliseerd. Gesprekjes tijdens voorlezen werden, meer dan gesprekjes tijdens praatplaten, gekenmerkt door het beschrijven van kenmerken

van objecten en gebeurtenissen, het samenvatten en integreren van verhaalelementen, het definiëren van woorden, relaties leggen met de eigen ervaringen van het kind, en het delen van meningen.

Ook opleidingsniveau van de ouders bleek van invloed op het abstractieniveau van de interacties. Hoger opgeleide ouders en hun kinderen produceerden meer abstracte taal en deden minder aan labelen, lokaliseren en opmerken dan lager opgeleide ouders en kinderen. In tegenstelling tot onze verwachting bleek type activiteit niet gerelateerd aan SES-verschillen in het abstractieniveau van interacties. Dit betekent dat praatplaten voor geen van de onderscheiden opleidingsniveaus meer of minder abstracte interacties uitlokten dan voorlezen. Opmerkelijk was dat het gebruik van abstracte taal van ouders tijdens praatplaten de geletterde vaardigheden en receptieve woordenschat van kinderen voorspelde. Dit bleek niet het geval voor abstract taalgebruik van de ouder tijdens het voorlezen.

PRAKTISCHE IMPLICATIES

Bij het onderzoeken van de implementatie en effecten van VVE Thuis voor kleuters bleken zowel de overdracht van het programma door leerkrachten op ouders als de intensiteit van programmadeelname door ouders niet optimaal. Dit laatste gold met name voor laag opgeleide ouders en ouders die tot een etnische minderheidsgroep behoren. Om de implementatiekwaliteit te verhogen, is het belangrijk om meer aandacht te schenken aan de 'fit' tussen scholen en leerkrachten, het gezinsprogramma (in dit geval VVE Thuis voor kleuters), en deelnemende ouders (Meyers, Dupre, & Wandersman, 2012). Een uitgebreidere voorbereiding op de programma-implementatie kan hieraan bijdragen. Deze voorbereiding kan onder meer bestaan uit het in kaart brengen van de talige en culturele achtergronden van deelnemende ouders, hun motivatie voor programmadeelname (Perepletchikova & Kazdin, 2005), en de (geletterde) activiteiten die zij thuis al doen met hun kinderen. Ook is het belangrijk te kijken naar de capaciteiten en behoeften van betrokken leerkrachten. Met behulp van dit soort informatie kan worden nagegaan of kenmerken van programma, ouders, en school op elkaar aansluiten en kunnen acties worden ondernomen om een betere afstemming te bereiken. Differentiatie is een belangrijk onderdeel in dit proces: waar nodig, moet rekening worden gehouden met verschillen tussen leerkrachten en ouders ten aanzien van hun taal en cultuur, vaardigheden, behoeften en wensen. Deze differentiatie kan een aantal vormen aannemen, die hieronder nader worden toegelicht.

Differentiatie in overdracht van ouder-kind programma's

Ten eerste kan het vruchtbaar zijn om ouders tijdens een deel van de ouderbijeenkomsten onder te verdelen in subgroepjes, die worden samengesteld op basis van hun behoefte aan ondersteuning en instructie. Dit kan leerkrachten ook behoeden voor de druk om hun instructies in te korten teneinde hoger-opgeleide ouders niet te vervelen en voor terughoudendheid bij het hanteren van bepaalde trainingstechnieken (zoals rollenspel en samendoen). Ten tweede kunnen additionele huisbezoeken voor bepaalde gezinnen bijdragen aan een betere programmaoverdracht (Aram et al., 2013; Hannon et al., 2006; Hirst et al., 2010; Manz et al., 2010; Sylva et al., 2008). Het voordeel van huisbezoeken is dat die overdracht dan op maat kan worden aangeboden. Ten derde, moeten degenen die het programma overdragen (leerkrachten en/of welzijnswerkers in het geval van VVE Thuis) worden toegerust om te differentiëren. Voorgaand onderzoek heeft laten zien dat lerarenopleidingen hun studenten niet voldoende voorbereiden op het omgaan met (een diverse groep) ouders (Epstein & Sanders, 2006; Ferrara & Ferrara, 2005; Lawrence-Lightfoot, 2003; Lusse, 2015). Dat kan deels worden opgelost door aanvullende training voor leerkrachten in programma-implementatie op te nemen, maar kan ook worden gezien als een opdracht voor de opleidingen. Tot slot is het voor beleids- en programmamakers te adviseren om zich met het inzetten van ouder-kind programma's op een meer homogene doelgroep te richten. Het onderzochte programma bleek voor geen van de subgroepen (laag of hoog opgeleid, wel of geen migratieachtergrond, en al dan niet Nederlands als moedertaal) binnen de diverse oudergroep effectief. Een meer homogene oudergroep maakt het gemakkelijker om het aanbod toe te snijden op de deelnemers, wat de kans op positieve programma-effecten vergroot. Op deze manier komen ook de (financiële) middelen die nodig zijn voor implementatie van een gezinsprogramma terecht bij degenen die de ondersteuning het hardste nodig hebben.

Differentiatie in inhoud van ouder-kind programma's

Differentiatie kan ten eerste bestaan uit het matchen van doelen met vaardigheden van ouders. Voor ouders die niet gewend zijn om voor te lezen, is het stellen van abstracte vragen ("Waarom denk je dat de vos moet lachen?"), wellicht een brug te ver. Voor deze gezinnen is het waarschijnlijk lonender om hen eerst uit te nodigen vaker een boekje of een praatplaat te pakken, maar nog zonder abstracte interacties te forceren. Ten tweede raden wij programma-ontwikkelaars aan om aandacht te hebben voor de eigen taal van deelnemende gezinnen door programmamaterialen in andere talen te ontwikkelen en ouders aan te moedigen er gebruik van te maken en zo doende de kwaliteit van programmadeelname te verhogen. In eerder onderzoek wordt gewaarschuwd voor

het gebruik van een andere taal dan de moedertaal, wanneer deze eerste minder goed ontwikkeld is (Tabors & Snow, 2001). Bevindingen uit de interventiestudie laten zien dat, hoewel beperkt vertaalde materialen beschikbaar waren, en de meeste deelnemende scholen ouders aanraadden om het programma in hun moedertaal uit te voeren, de meerderheid van de meertalige ouders er toch voor koos om met de Nederlandse versie te werken. Deze voorkeur komt mogelijk voort uit een gebrek aan kennis over de voordelen van het behoud van de moedertaal (Anderson et al., 2011; Wong-Fillmore, 1991; Young, 2014). Ten derde is het mogelijk dat de activiteiten die gebruikt worden in programma's zoals VVE Thuis, niet volledig aansluiten bij wat ouders thuis al doen om de talige en geletterde ontwikkeling van hun kind te ondersteunen. Manz et al. (2010) pleit voor een partnerschapsbenadering, waarbij stakeholders (ouders en kinderen) actief worden betrokken in het ontwikkelen van programma's en het ontwerpen van onderzoek naar die programma's. Om de implementatiekwaliteit te verbeteren kan het gunstig zijn om meer cultureel-sensitieve programma-materialen te ontwikkelen, bijvoorbeeld door deze met gezinnen te co-construeren (Anderson et al., 2011). Ten vierde lieten de observatiestudies binnen dit proefschrift zien dat praatplaten meer abstract taalgebruik uitlokken dan verhaaltjes, van zowel hoog- als laagopgeleide ouders. Desalniettemin bleven verschillen in abstract taalgebruik tussen ouders van diverse opleidingsniveaus en hun kinderen bestaan. Dit impliceert dat we wellicht de manier waarop ouder-kind programma's zoals VVE thuis beogen de kwaliteit van ouder-kind interactie te versterken (via ouderbijeenkomsten, en instructievellen bij programma-activiteiten) moeten herzien. Een alternatieve benadering is het toevoegen van interactie-prompts aan programma-activiteiten. Eerder onderzoek laat zien dat digitale geletterde activiteiten met interactie-prompts erin kunnen slagen om de kwaliteit van ouder-kindinteracties te verhogen (Lauricella, Barr, & Calvert, 2014; Teepe, 2018). Tot slot draagt het gefaseerde ontwerp dat aan veel ouder-kind programma's ten grondslag ligt bij aan uitdagingen voor succesvolle implementatie. De ketting is immers zo sterk als de zwakste schakel. Een manier om de ketting in te korten is om zowel ouders als hun kinderen te betrekken in programma-overdracht. Dit heeft als voordeel dat trainers directe feedback kunnen geven op gedrag en taalaanbod van ouders terwijl zij in gesprek zijn met hun kind. Een degelijke aanpak lijkt veelbelovend in de context van vroege interventie voor gezinnen met laag opgeleide (etnische-minderheids) ouders (Anderson et al., 2011; Van der Pluijm, Van Gelderen, & Kessels, in voorbereiding).

CONCLUSIE

Dit proefschrift heeft laten zien dat ook andere activiteiten dan voorlezen geschikt zijn om de kwaliteit van ouder-kind interacties te stimuleren. Praatplaten bleken veelbelovende activiteiten voor vroege interventie, in het bijzonder vanwege de mogelijkheid om kinderen actief te laten deelnemen aan het gesprek en abstracte gesprekjes uit te lokken, waaronder het maken van inferenties. Vaardigheden zoals inferenties kunnen maken zijn belangrijk voor de latere leesontwikkeling. Daarnaast maken onze bevindingen duidelijk dat een goede implementatiekwaliteit van gezinsprogramma's niet vanzelfsprekend is. We onderstrepen daarom het belang van aandacht voor implementatiekwaliteit, zowel in onderzoek als in de praktijk. Toekomstige evaluatiestudies van gezinsprogramma's zouden meer aandacht moeten besteden aan implementatiekwaliteit om al dan niet optredende effecten te kunnen duiden. In de praktijk is het belangrijk om de implementatie van een gezinsprogramma systematisch voor te bereiden. Daarbij is aandacht voor differentiatie in programmadoelen, -materialen en overdracht essentieel om de doorgaans diverse groep van deelnemende gezinnen beter te ondersteunen.

ABOUT THE AUTHOR

CURRICULUM VITAE

Sanneke de la Rie was born in Deventer, The Netherlands, in 1986. She holds a Bachelor in Social Sciences and a Master in Sociology *[cum laude]* from Utrecht University. As of 2010 she is a researcher and teacher at Research Center Urban Talent, Rotterdam University of Applied Sciences. She conducted various research projects in the areas of education and parental involvement, among which evaluation studies of educational interventions (summer schools, time-4-you, and genre pedagogy in reading and writing). In her teaching she focused on research skills and thesis supervision for social work and pedagogical sciences students, at Rotterdam University of Applied Sciences and Erasmus University. In her PhD research, she examines family literacy programs and children's early language and literacy development. She is especially interested in program implementation quality within different social-economic and ethnic groups, and what works for families from various backgrounds.

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Enhancing literacy skills in children who are at risk of lagging behind in school is an international policy priority, as these skills are of key importance for children's academic careers. Recognizing the strong and long lasting influence of parents as first educators of their children, family literacy programs aim to promote children's literacy development by stimulating the home literacy environment, particularly in at-risk families. Previously established disappointing program effects for these families stress the need for insight into how programs are implemented. Starting from a comprehensive framework for measuring implementation quality, this dissertation examines how implementation quality is generally included in family literacy research. Applying the framework in an effect study of the Dutch program Early Education at Home, this dissertation provides recommendations for how the implementation of family literacy programs can be improved.