



## Shared reading in infancy and later development: Evidence from an early intervention



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### ABSTRACT

This study uses data from an evaluation of an early intervention programme, *Preparing for Life*, to estimate the impact of book gifting on shared reading during infancy and the association between reading and later development. Participants were randomised during pregnancy to a high intensity intervention group, receiving mentoring and book packs ( $n = 78$ ), and a low intensity intervention group, receiving book packs only ( $n = 80$ ). A no-intervention comparison group were allocated using non-random assignment ( $n = 78$ ). At 6 and 12 months both the high and low intensity groups were more likely to read to their infant a few times per week or daily than the comparison group. The intervention groups did not differ statistically on reading frequency. Daily reading at 6 months predicted higher vocabulary comprehension and production, cognition, and socioemotional competence at 12 months. Book gifting may offer an efficient means of reading promotion in disadvantaged communities.

### 1. Introduction

Shared book reading has been identified as a promising means of promoting children's early development, particularly as a vehicle for redressing socioeconomic disparities in children's skills at school entry (Arnold & Doctoroff, 2003; Brooks-Gunn & Markman, 2005). Gifting books to families is amongst the most widely utilised strategies to support early reading and has been linked to language gains for toddlers and preschool-aged children (Wade & Moore, 2000; Zuckerman, 2009). Recently there have been recommendations that shared reading between parents and children should start from birth (American Academy of Pediatrics [AAP], 2014). Yet questions remain regarding the level of support needed to shape regular reading habits and the areas of development that may benefit. The present study sought to address these gaps by exploiting data from a wider randomised controlled trial study of an early intervention programme, *Preparing for Life*, to compare the benefits of book gifting, versus book gifting combined with home visits from trained mentors. It further examined whether reading at 6 months was associated with children's language, cognitive, and socioemotional development at 12 months.

#### 1.1. Shared reading and children's development

A consistent body of meta-analytic evidence has established links between shared book reading and greater language, literacy, and cognitive skills amongst toddler, preschool, and early school-aged children (e.g., Bus, van IJendoorn, & Pellegrini, 1995; Mol & Bus, 2011; Scarborough & Dobrich, 1994; Sénéchal & Young, 2008). The magnitude of the benefit is modest, with shared reading typically explaining about 8–12% of the variance in outcomes. Yet these gains are thought to intensify over time due to “snowball” (Raikes et al., 2006) or “upward spiral” (Mol & Bus, 2011) effects, such that reading to young children facilitates the development of basic literacy skills, which builds interest in books, leading to increased shared reading, which ultimately translates into gains in language and comprehension.

This idea draws on transactional models of development (Sameroff & Fiese, 2000), whereby the child and environmental inputs (such as parents) influence each other reciprocally (Raikes et al., 2006). Similar cycles have been described by Fletcher and Reese (2005) using a sociocultural perspective to conceptualise how frequent reading promotes parents' sensitivity to their infant/toddler's linguistic abilities, allowing

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them to better match their strategies to their child's development. If such models are accurate, it is arguable that outcomes may be amplified when reading is set in motion as early as possible, a position recommended by the American Academy of Pediatrics [AAP] (2014). Starting reading early is also likely to extend opportunities for frequent reading routines to become established, and confer greater cumulative effects ahead of school entry.

Early reading may also capitalise on sensitive periods of brain development in infancy (Halfon, Shulman, & Hochstein, 2001). This approach is also developmentally viable. From birth, infants prefer familiar nursery rhymes that had previously been read aloud during pregnancy (DeCasper & Spence, 1986). Neurobiologically, it appears that infants possess neural memory for such sounds (Partanen et al., 2013), and have a striking ability to detect and process speech during story telling (Peña et al., 2003). Over the next six months, infants experience a dramatic increase in periods of alertness, object perception and spatial orienting (Colombo, 2001), with joint visual attention consolidating from around 4 months of age (Butterworth, 2001). In shared reading contexts, the first six months see infants begin to attend to books, follow their parent's cues, and attempt to physically manipulate books (e.g., scratch, tap and grab) (Lamme & Packer, 1986). Although little is known about caregivers' early book sharing behaviour, studies with 6–18 month olds suggest that reading offers a particularly rich and supportive context for parents' use of pointing, labelling, and commenting, which are optimal supports for children's language and cognitive development (Fletcher & Reese, 2005).

The design of baby books themselves, which includes features such as simple elements that repeat over several pages, also make them ideal for vocabulary development (Murray, 2014). Repeated pictures that retain the referent's core elements, allow the infant to grasp its defining features and couple their direct experience of the subject with the word used to represent it (Murray, 2014). This is particularly helpful in developing vocabulary for subjects that are dynamic or fleeting in the environment (e.g., actions, emotional expressions) or those that are not easily experienced in everyday life (e.g., jungle animals) (Fletcher & Reese, 2005; Murray, 2014).

Studies testing the impact of very early shared reading, however, are both sparse and equivocal and have yet to be subjected to meta-analysis (Mol & Bus, 2011). Generally, infants who are read to before 12 months outperform their peers with later reading experiences, particularly regarding language and literacy skills (Dunst, Simkus, & Hamby, 2012). Yet it remains unclear whether reading in the first six months confers developmental gains. Niklas, Cohrsens, and Tayler's (2016) recent retrospective study found an association between recalled initiation of reading in the first six months and rhyming ability and verbal comprehension (Woodcock-Johnson Tests of Cognition and Achievement; Mather & Woodcock, 2001a, 2001b) in kindergarten. However, Tomopoulos et al. (2006) failed to find prospective associations for reading at 6 months and expressive and receptive language (Preschool Language Scale; Zimmerman, Steiner, & Pond, 1992) and cognitive development (Bayley Mental Developmental Index; Bayley, 1993) at 21 months. In Karrass and Braungart-Rieker's (2005) prospective study, reading at 8 months, but not 4 months, was related to expressive and receptive language abilities (composite scores from language items on the Bayley Mental Scale; Bayley, 1969) and parent report on the Sequenced Inventory of Communicative Development-Revised Expressive and Receptive Scales; Hendrick, Prather, & Tobin, 1984) at 12 and 16 months, although reading at 4 months did predict reading at 8 months. Cohort studies have also found support for associations between reading at 9 months and concurrent language and cognitive development (parent report on the Ages and Stages Questionnaire communication and problem solving subscales; Squires, Potter, & Bricker, 1999) and later expressive language development (parent report on the MacArthur Communicative Development Inventory; Fenson et al., 2006) however data on earlier reading were not available/reported (Farrant & Zubrick, 2011; Murray & Egan, 2014).

It is also uncertain whether reading offers wider benefits beyond cognition and language (Mol & Bus, 2011). Shared reading, being inherently social, and in early infancy primarily affective (Lamme & Packer, 1986), may provide an ideal context for emotionally satisfying parent-infant interactions (Bus, 2002; Fletcher & Reese, 2005; Murray, 2014; Tomopoulos et al., 2006). Although few studies have examined the impact of shared reading on socioemotional development at any age, a recent randomised controlled trial (RCT) of parent training in book sharing with 14–16 month old toddlers showed treatment effects for greater prosocial behaviour in a helping task (modelled on Buttleman, Carpenter, & Tomasello, 2009) and imitations of affectionate dolls play at a two month follow up (Murray et al., 2016).

Joint attention may be fundamental to book sharing's role in fostering both language and socioemotional outcomes. Mundy and Newell (2007) highlight how joint attention, the ability to coordinate attention with a social partner in relation to a third object or event, underpins language and social development. From 3 to 6 months of age infants begin to show capability for joint attention through behaviours such as following another's gaze, head turns and pointing (Mundy & Sigman, 2006; Scaife & Bruner, 1975). This encourages socioemotional reciprocity in interactions and co-regulation of interest and emotions, which helps facilitate the incorporation of objects such as books into shared interactions (Farrant & Zubrick, 2013). Crucially, joint attention occurs more commonly in book sharing than in other contexts (Murray, 2014).

Episodes of joint attention scaffold very early language development by helping the child to couple the adult's attentional focus with its linguistic referent, particularly when adults match their focus to that of the child (Tomasello & Farrar, 1986). Joint attention also serves social functions as it offers a means of sharing experiences and is associated with infants' tendency to share positive affect with others (Mundy et al., 2007). In this way joint attention may be associated with aspects of social competence such as showing interest in and sharing positive emotions with others (Mundy & Sigman, 2006; Vaughan Van Hecke et al., 2007). In high quality book sharing experiences, instances of joint attention are also likely to be characterised by parental warmth, responsiveness, and sensitivity (Vally, Murray, Tomlinson, & Cooper, 2015), behaviours associated with positive socioemotional development (van der Voort, Juffer, & Bakermans-Kranenburg, 2014). Evidence supporting the importance of joint attention also can be seen in studies documenting its associations in infancy (9–12 months) with later language ability at 5 years (Farrant & Zubrick, 2011) and social competence and externalising behaviour at 2.5 years (Vaughan Van Hecke et al., 2007).

Overall, it remains unclear whether the developmental value of reading prior to 6 months is negligible, confined to habit formation, or masked by limited variability in shared reading levels (Tomopoulos et al., 2006). Examining this question is important if we are to avail of the earliest opportunities to optimise development. By 12 months, infants' linguistic skills already uniquely discriminate their language, literacy, and cognitive trajectories through to school entry, more so than other cognitive domains (Dickinson, Griffith, Golinkoff, & Hirsch-Pasek, 2012; Peyre, Charkaluk, Forhan, Heude, & Ramus, 2017). Socioemotional development also shows some stability from 12 months, at least when measured using screening tools/checklists (Briggs-Gowan, Carter, Bosson-Heenan, Guyer, & Horwitz, 2006; van Zeijl et al., 2006). A corollary of any impact, however, is the need for supports that can effectively promote early reading. In their meta-analysis of 11 studies (including predominantly US samples and a high number of socioeconomically 'at-risk' samples) Dunst et al. (2012) report an average age of reading onset of 22 months, although Phillips and Lonigan (2009) report age of onset closer to 6 months in their mixed socio-economic sample. In addition studies of US nationally representative samples suggest that only a minority of families read daily to young infants; Kuo and colleagues found that less than half of parents read daily to 4–9 month-olds (Kuo, Franke, Regoado, & Halfon, 2004),

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